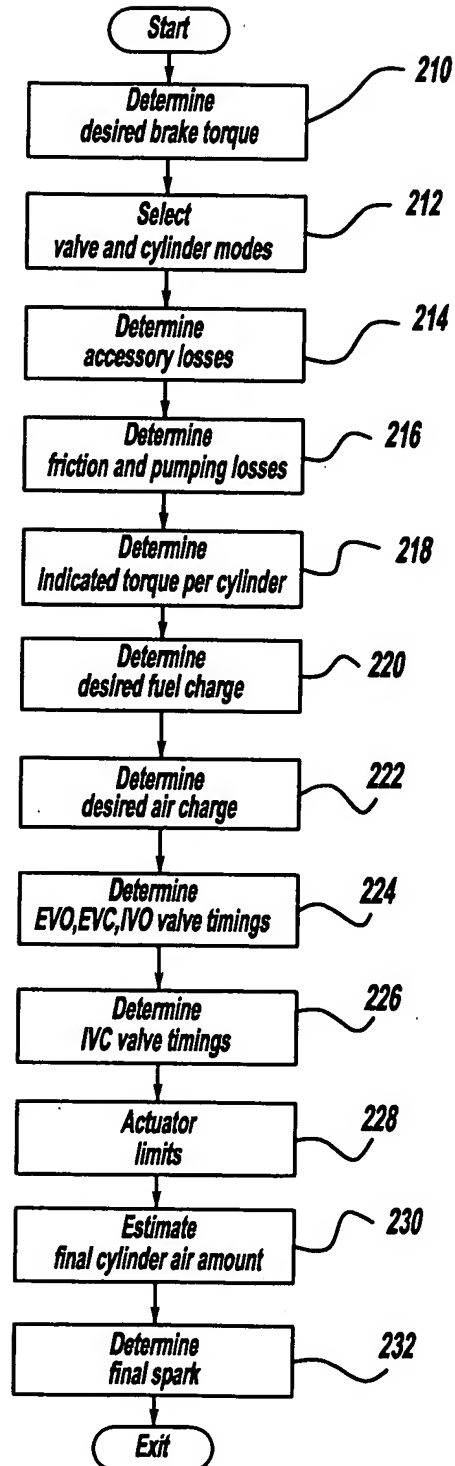
**FIG-1**

**FIG - 2**

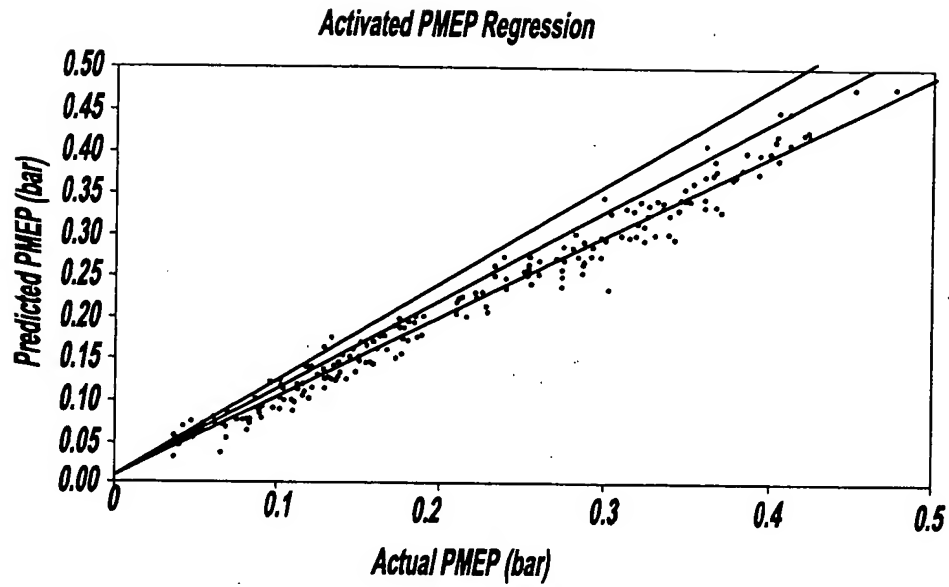


FIG - 3

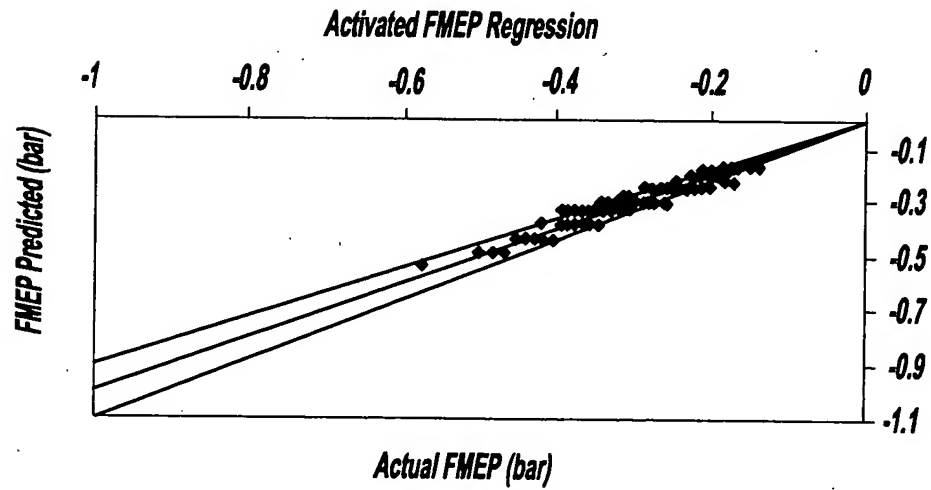


FIG - 4

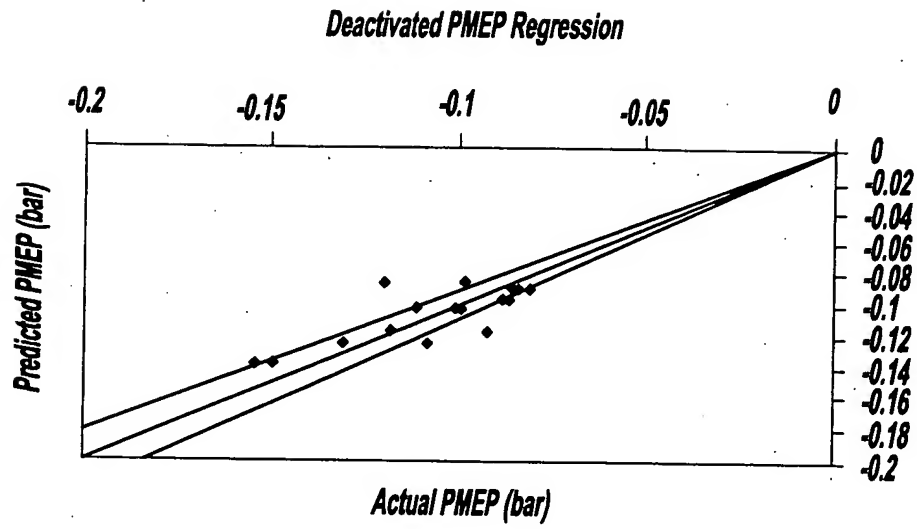


FIG - 5

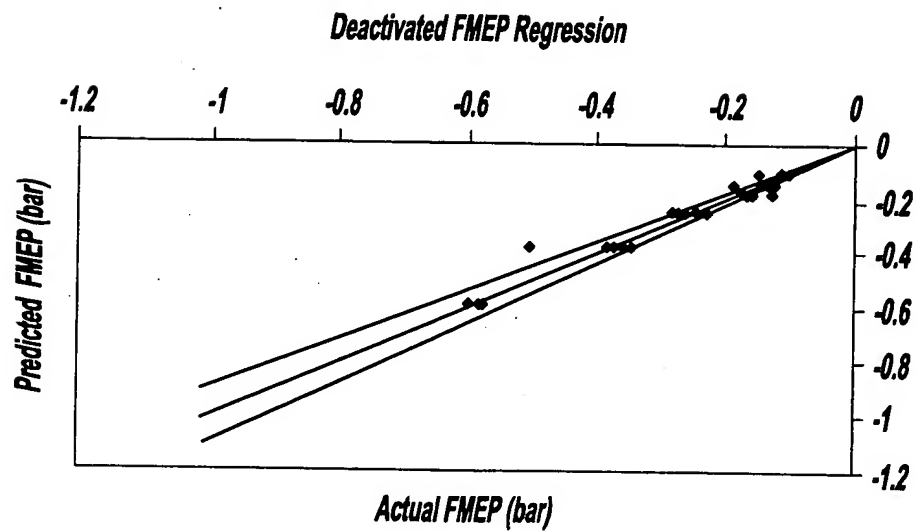
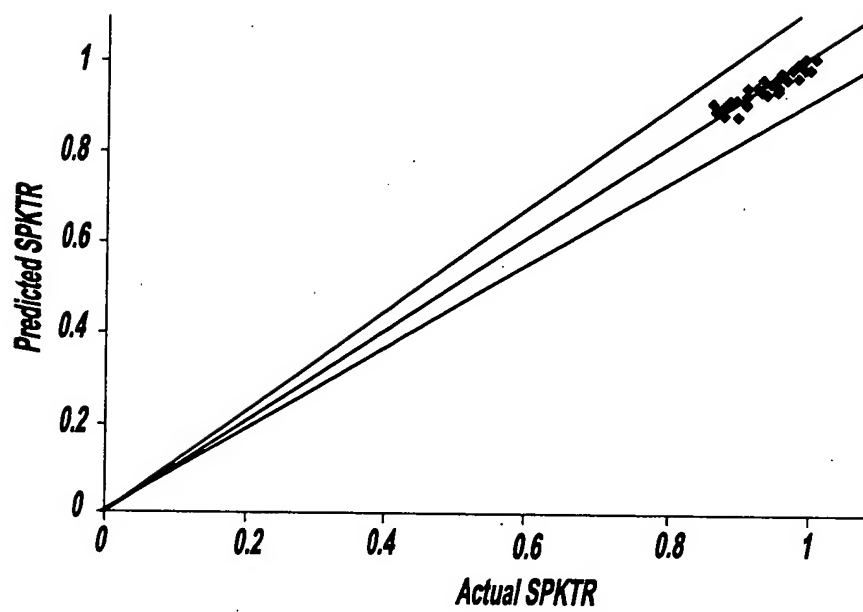
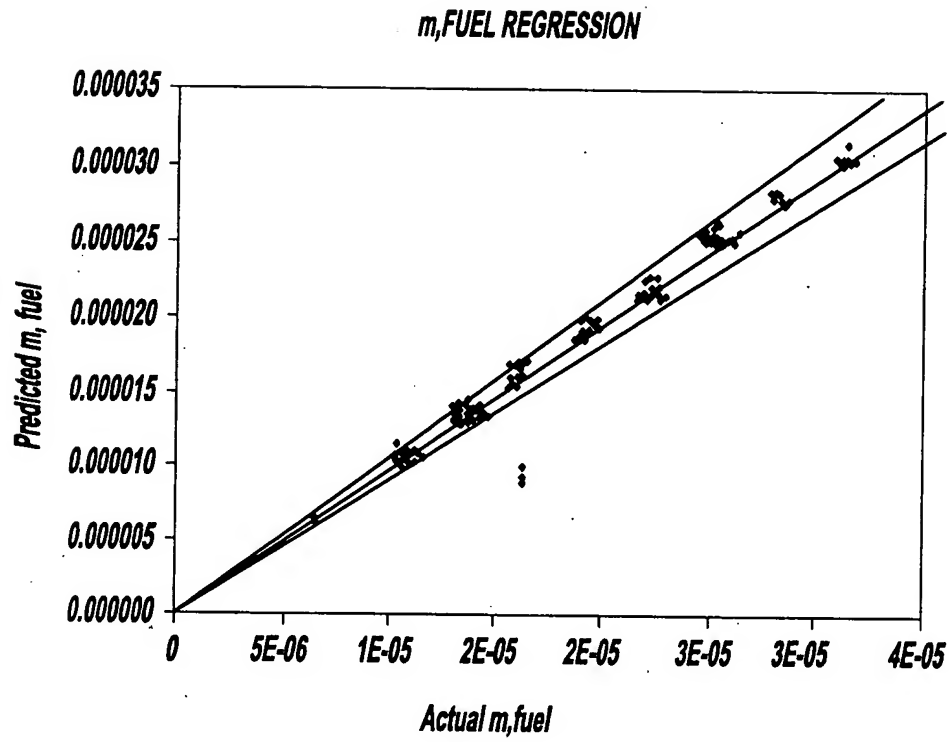


FIG - 6

Spark Retard Torque Reduction Regression**FIG - 7**

**FIG - 8**

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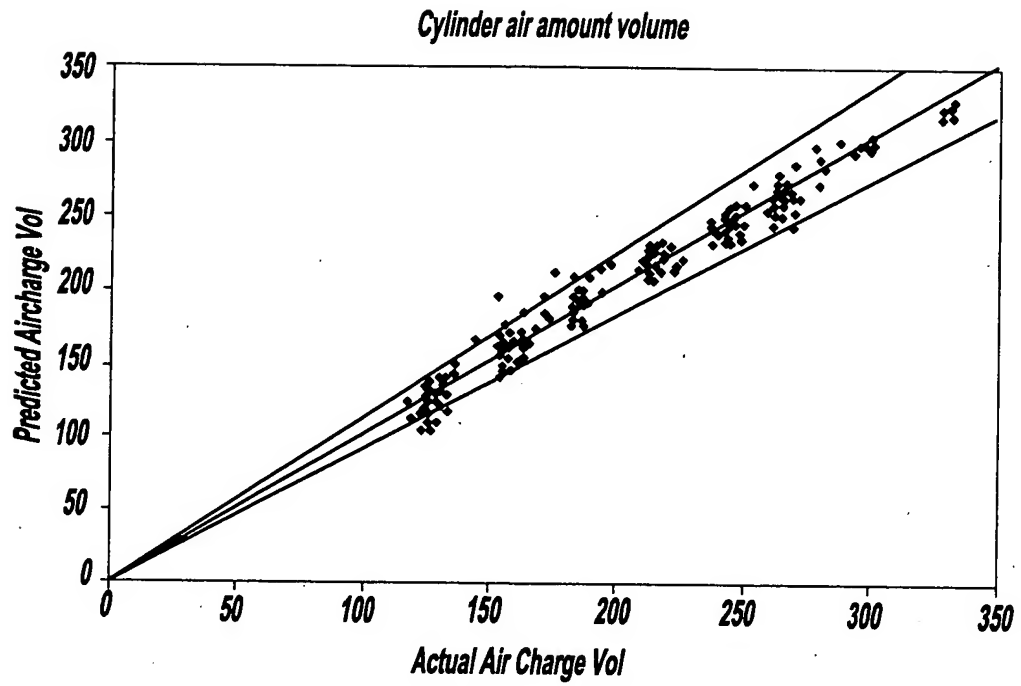
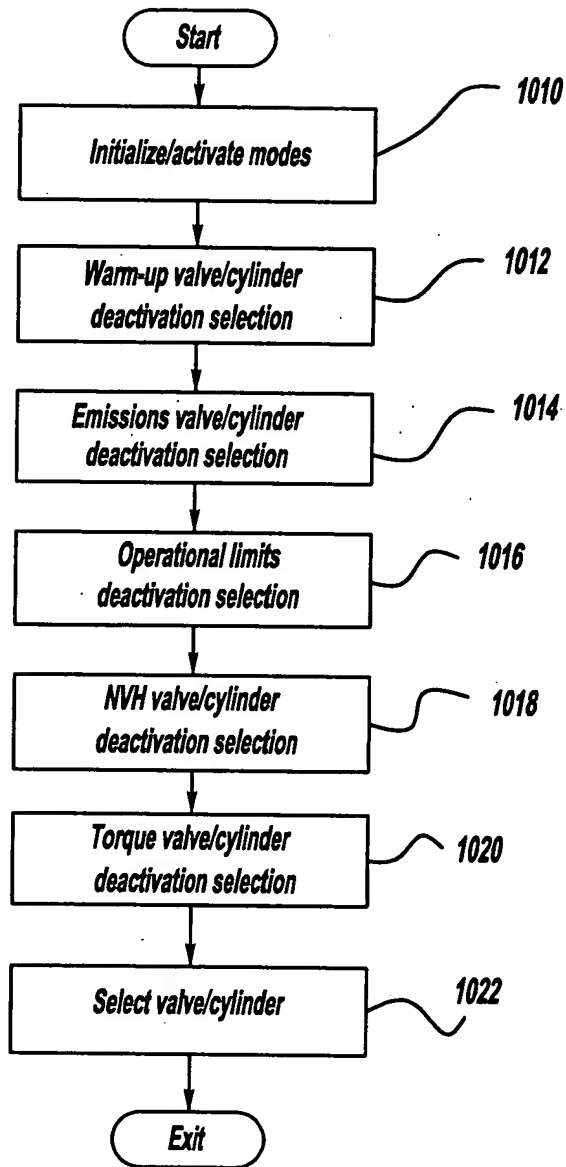


FIG - 9

**FIG - 10**

COLUMN 0 COLUMN 3

↓ DECREASING TORQUE ↑

V2	1	1	1	1	ROW 3
12-STROKE	1	1	1	1	
V4	1	1	1	1	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

→ DECREASING TORQUE →

FIG - 11

COLUMN 0 COLUMN 3

↓ DECREASING TORQUE ↑

V2	0	0	0	0	ROW 3
12-STROKE	0	0	0	0	
V4	1	1	0	0	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

→ DECREASING TORQUE →

FIG - 12

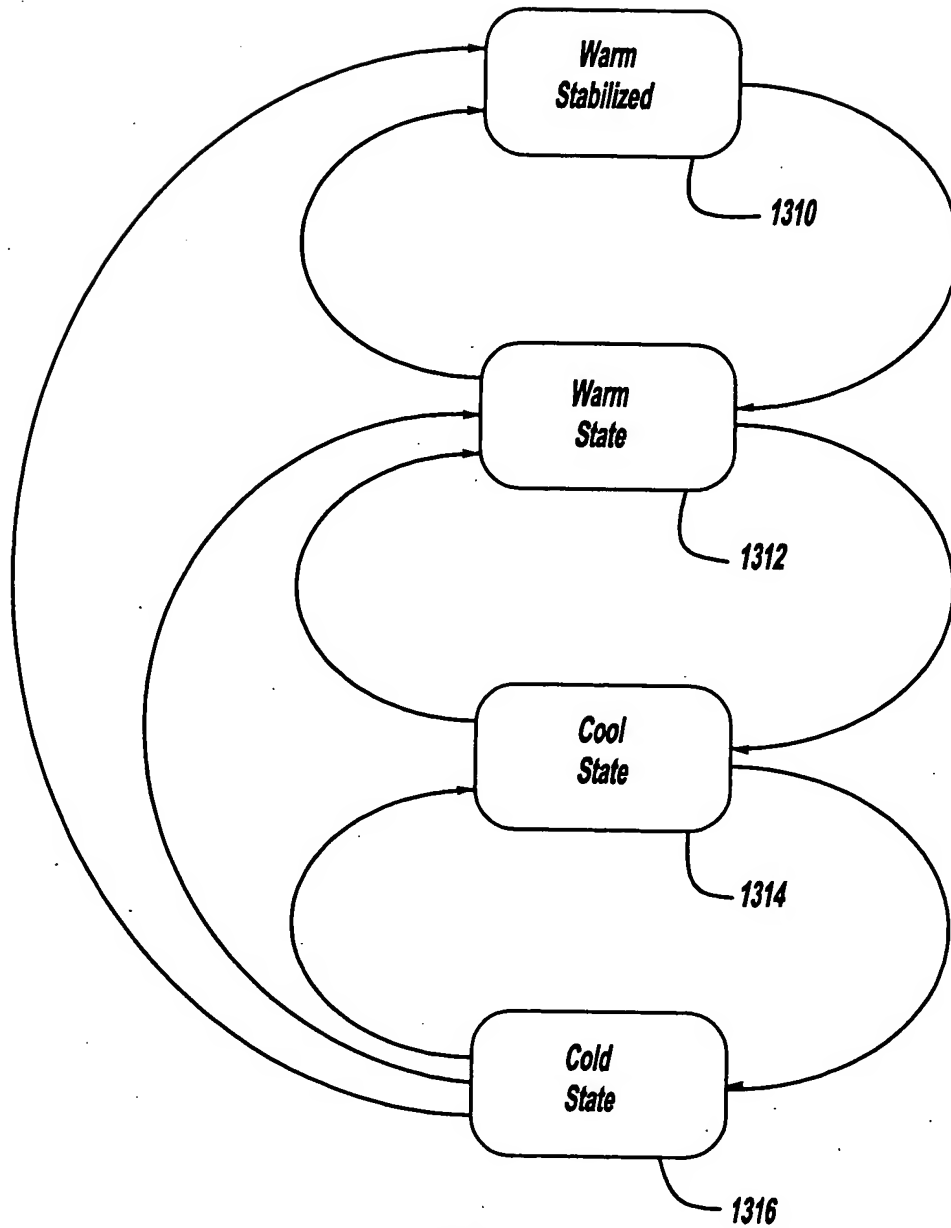


FIG - 13

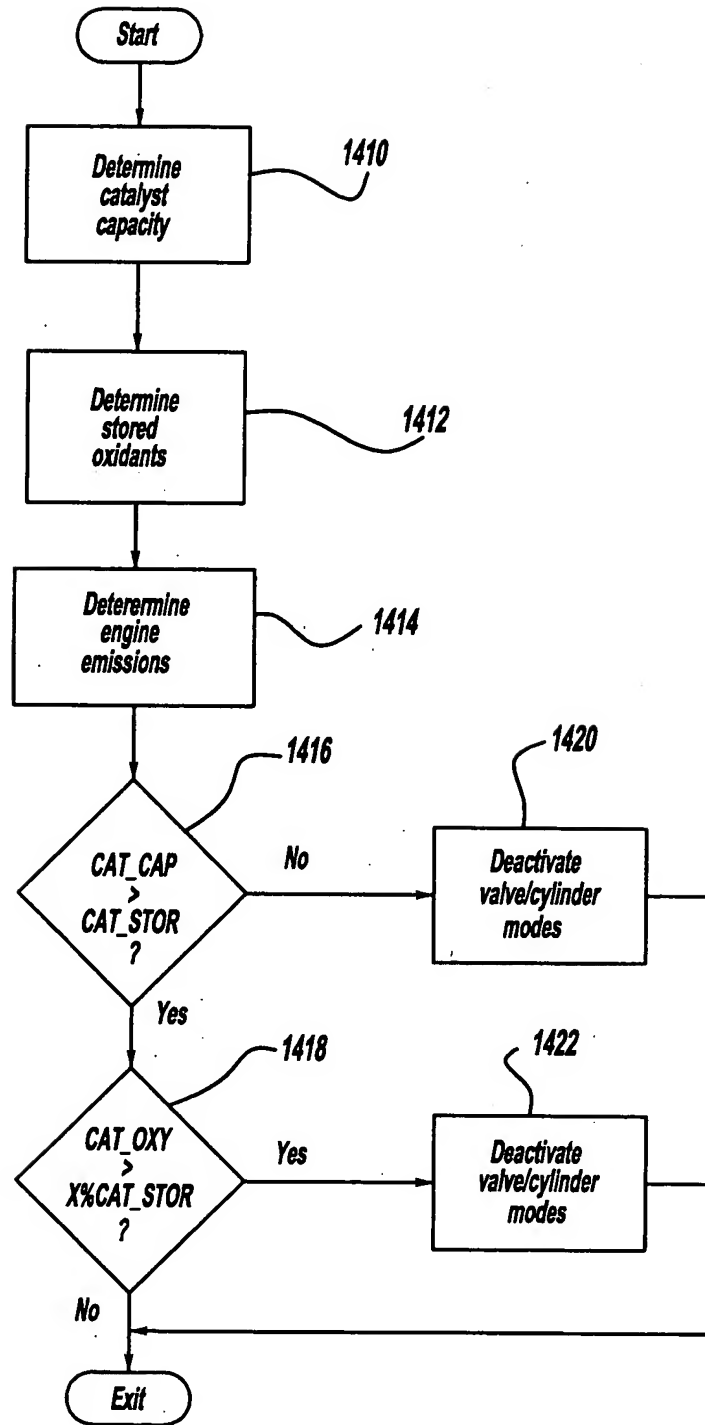
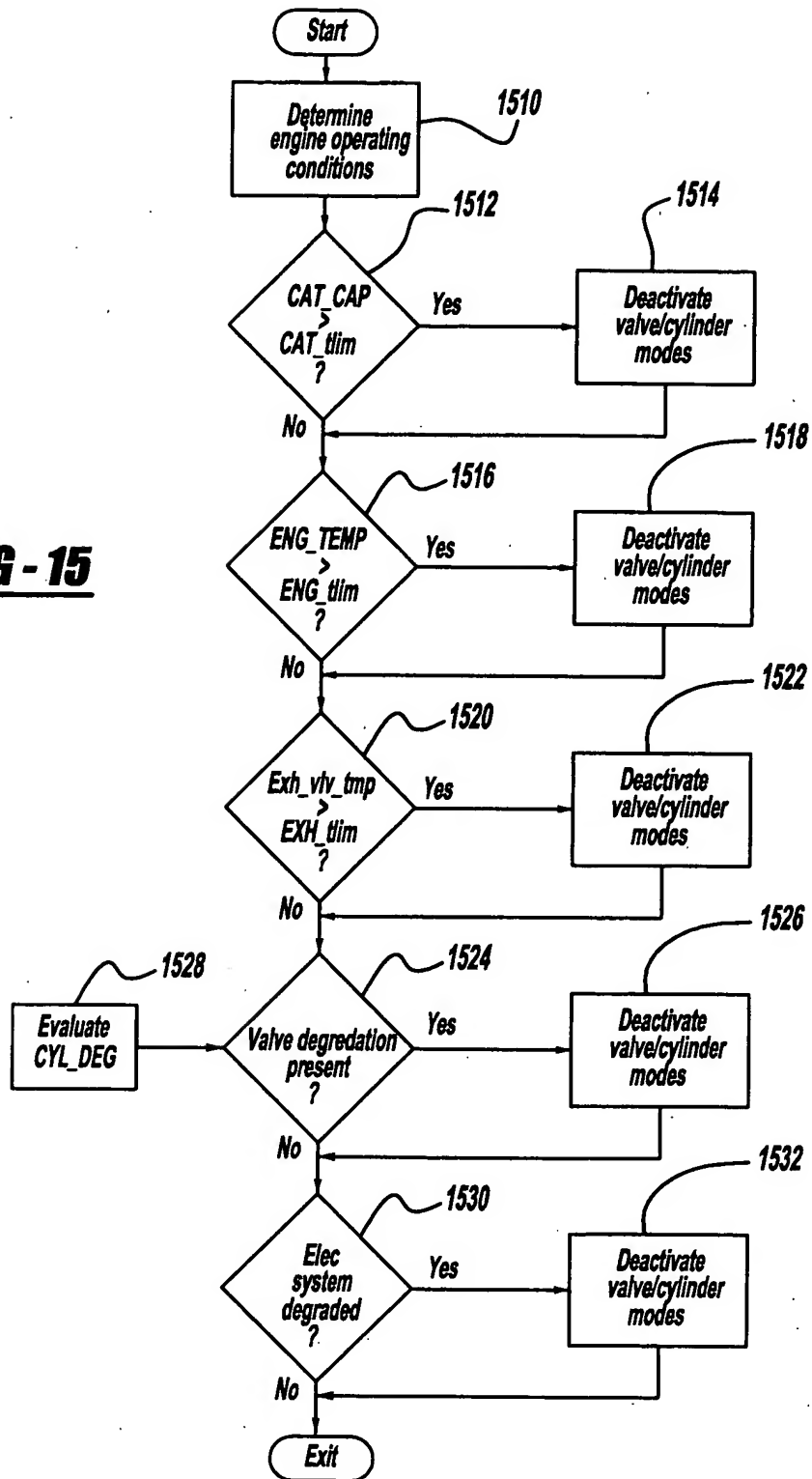
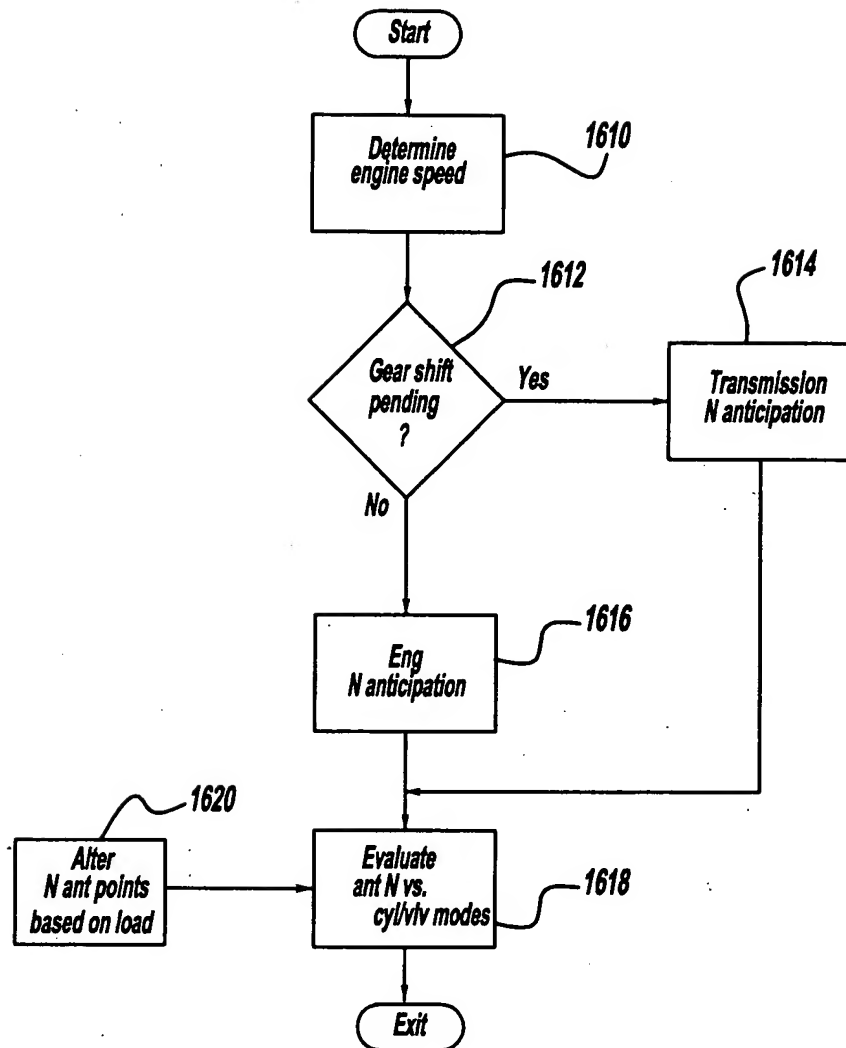
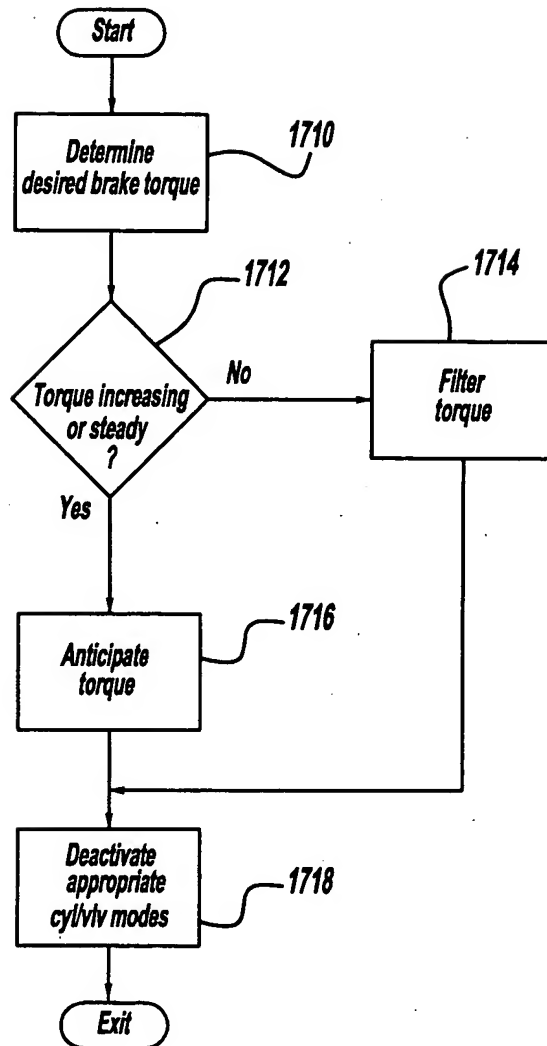
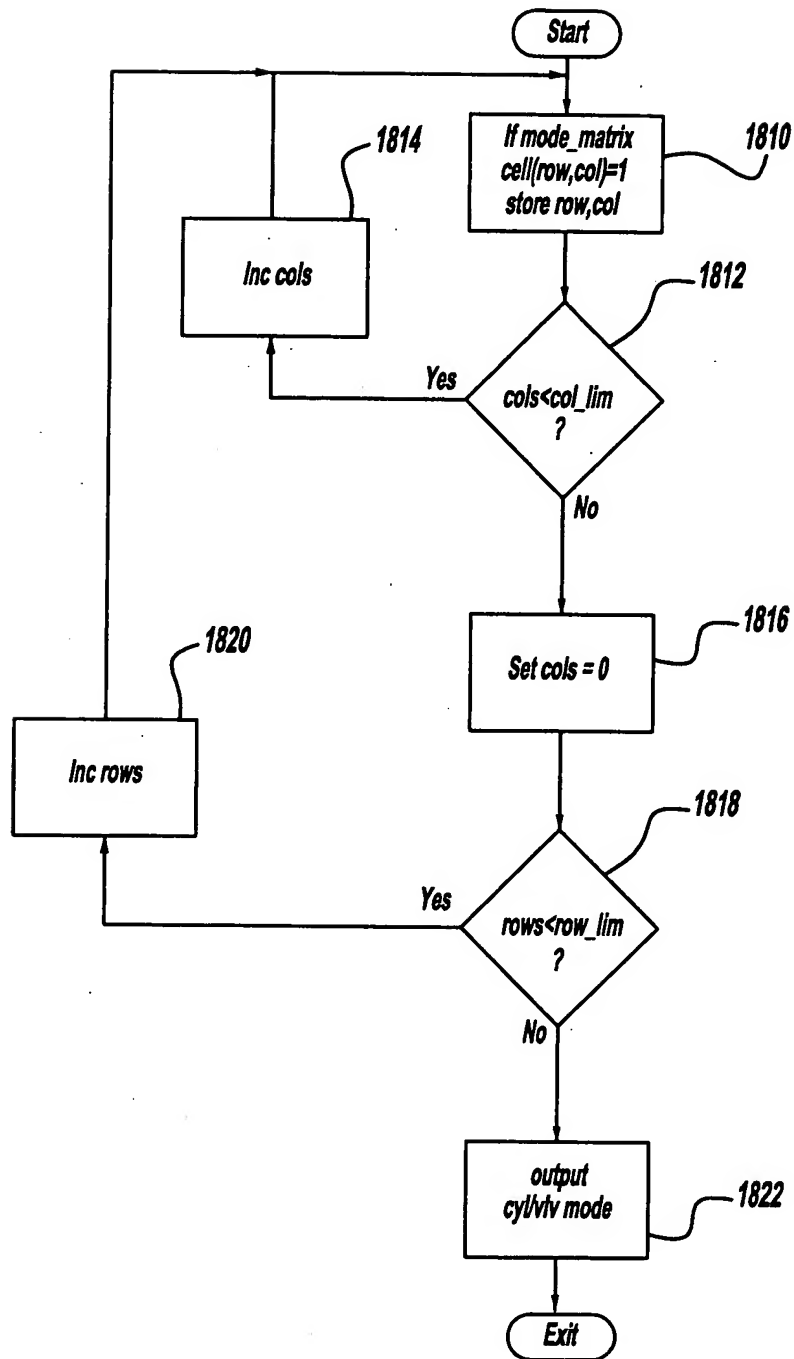
FIG - 14

FIG - 15

**FIG - 16**

**FIG - 17**

**FIG - 18**

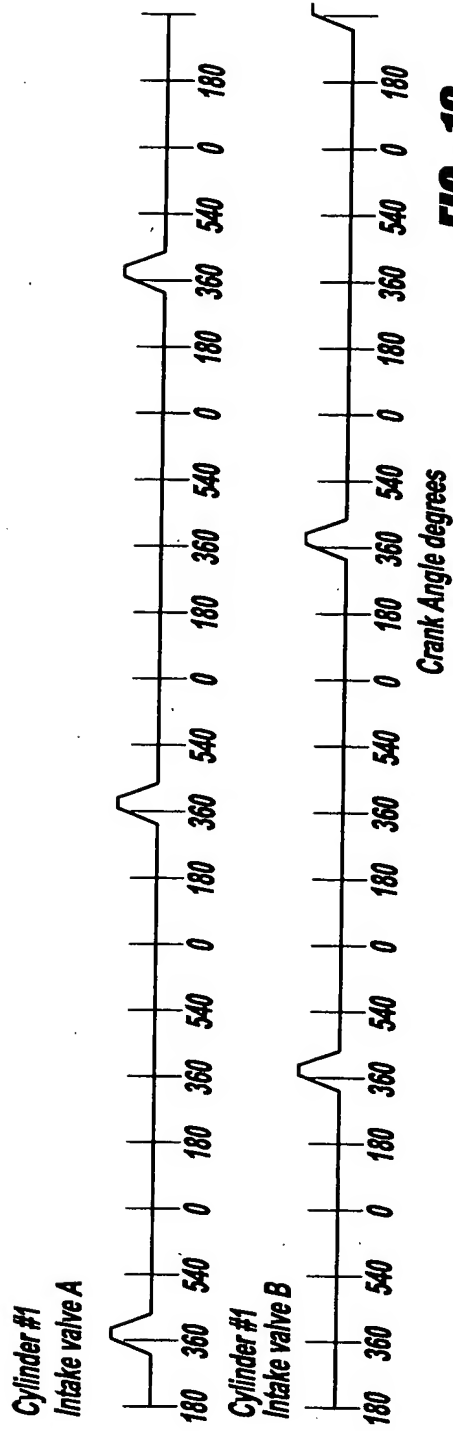


FIG - 19

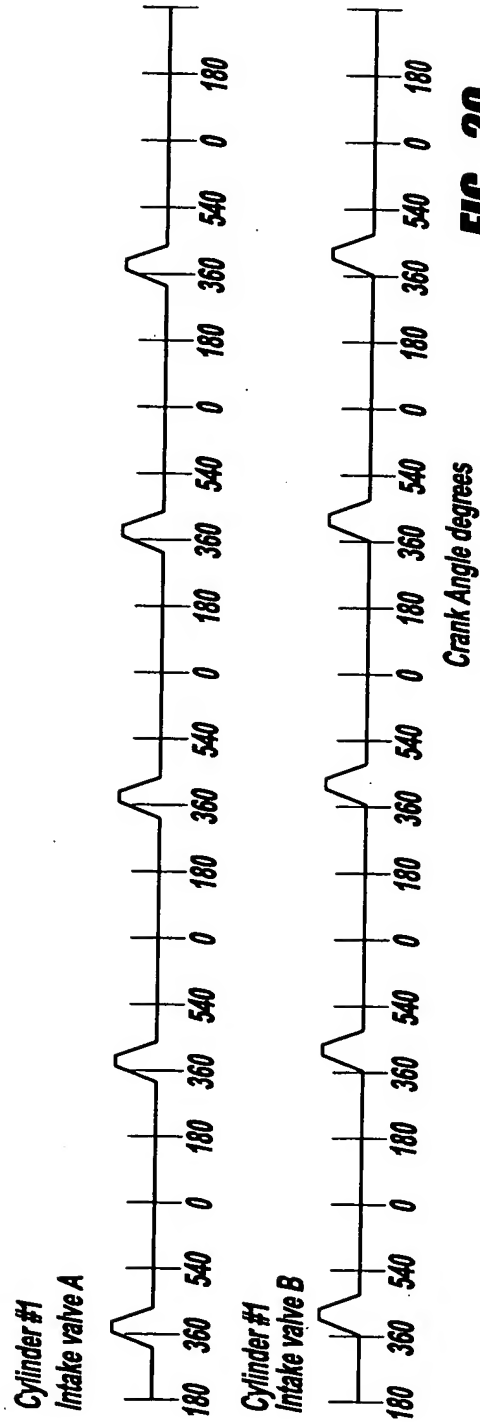


FIG - 20

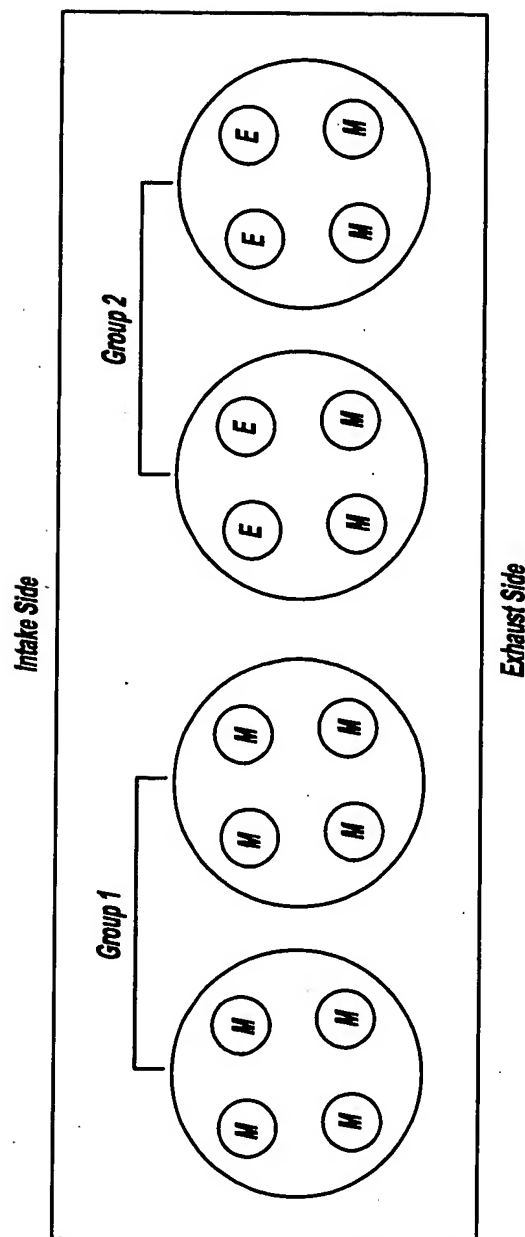


FIG - 21

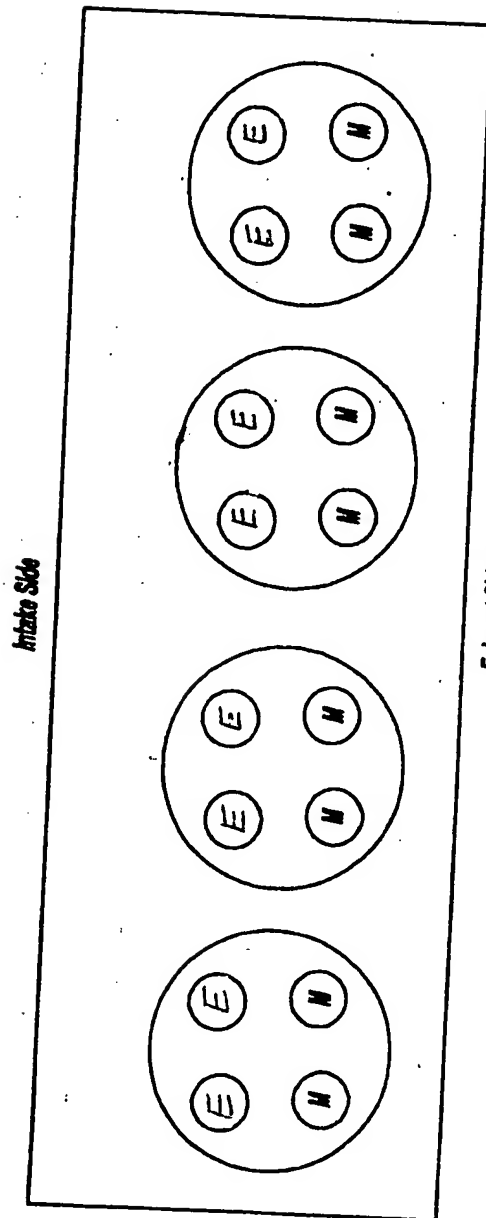


FIG - 21A

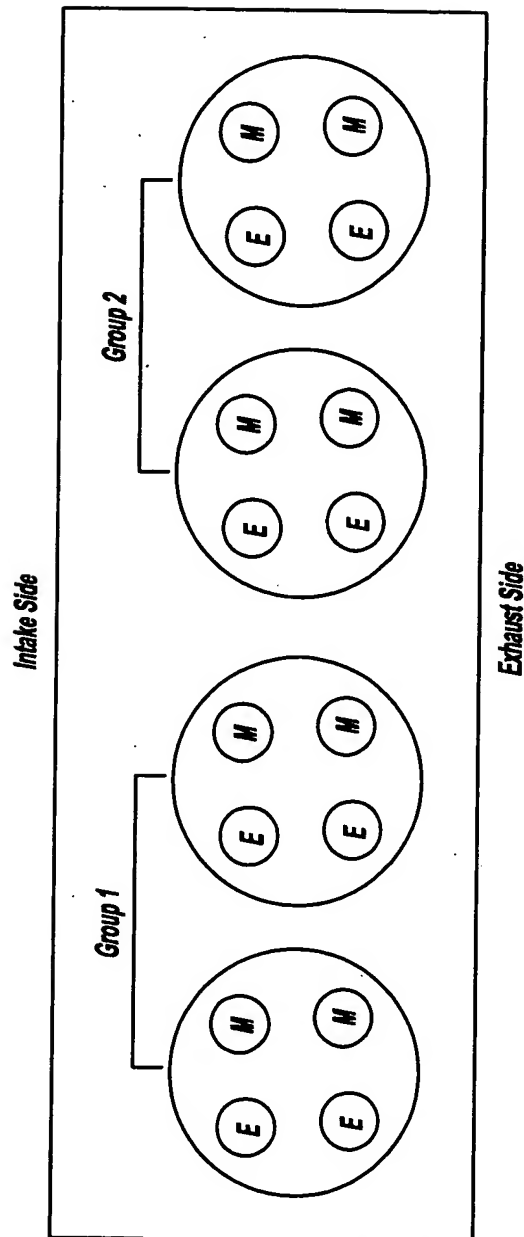


FIG - 22

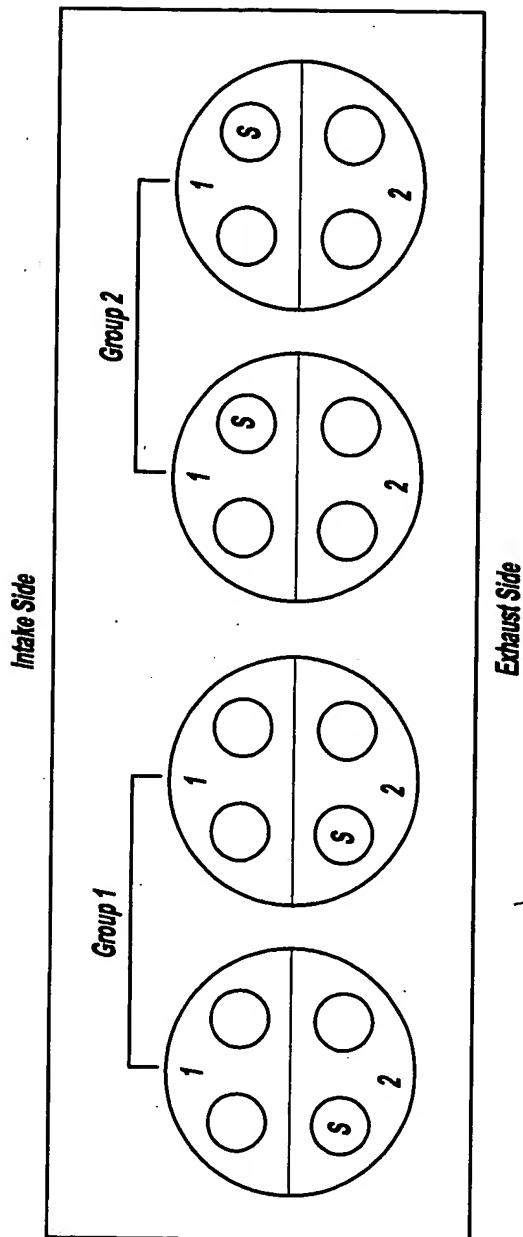


FIG - 23

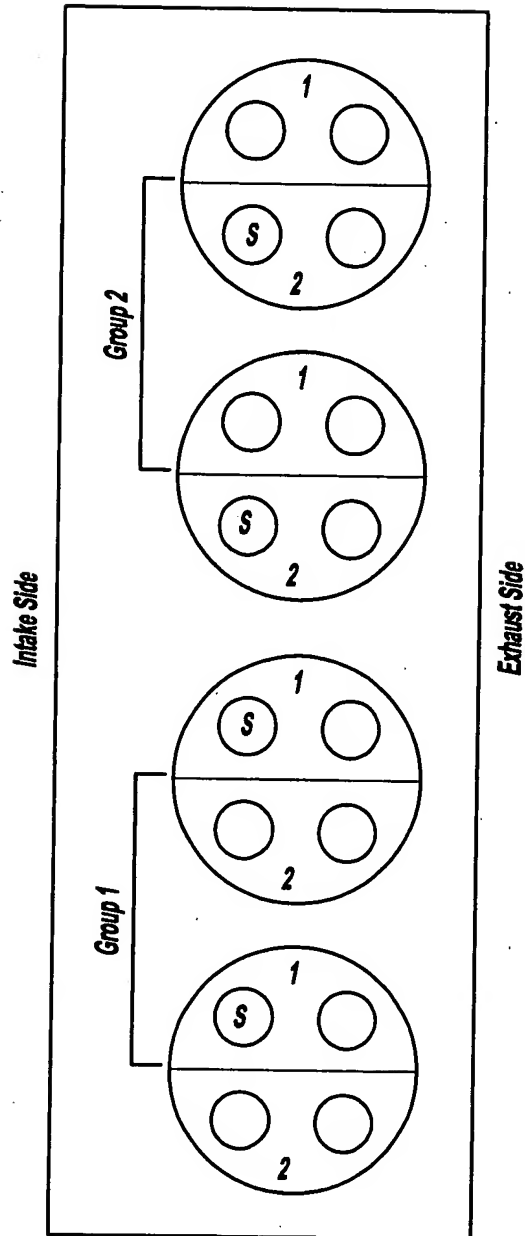


FIG - 24

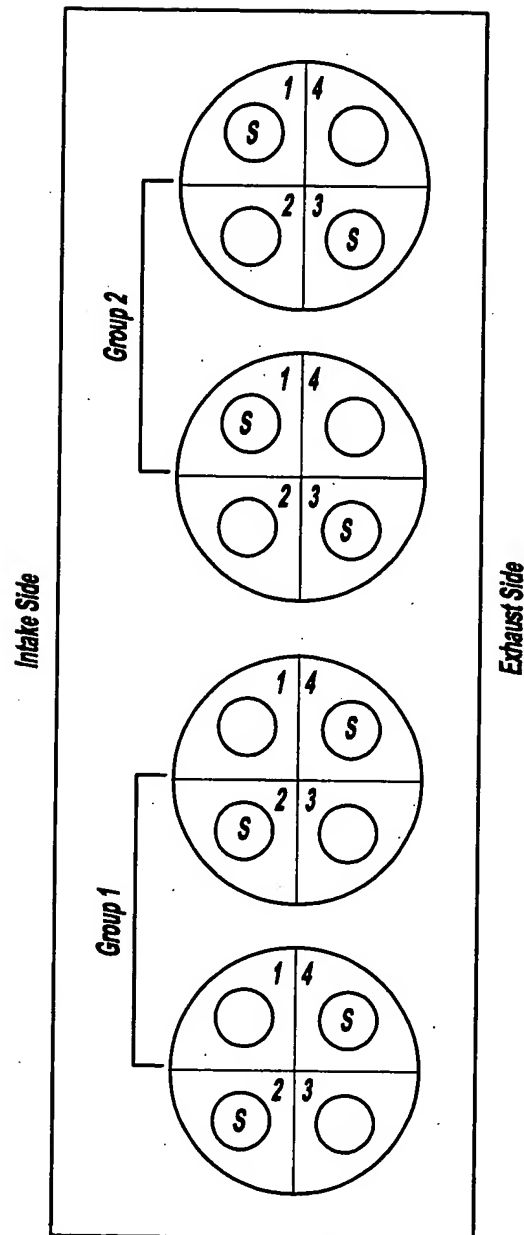


FIG - 25

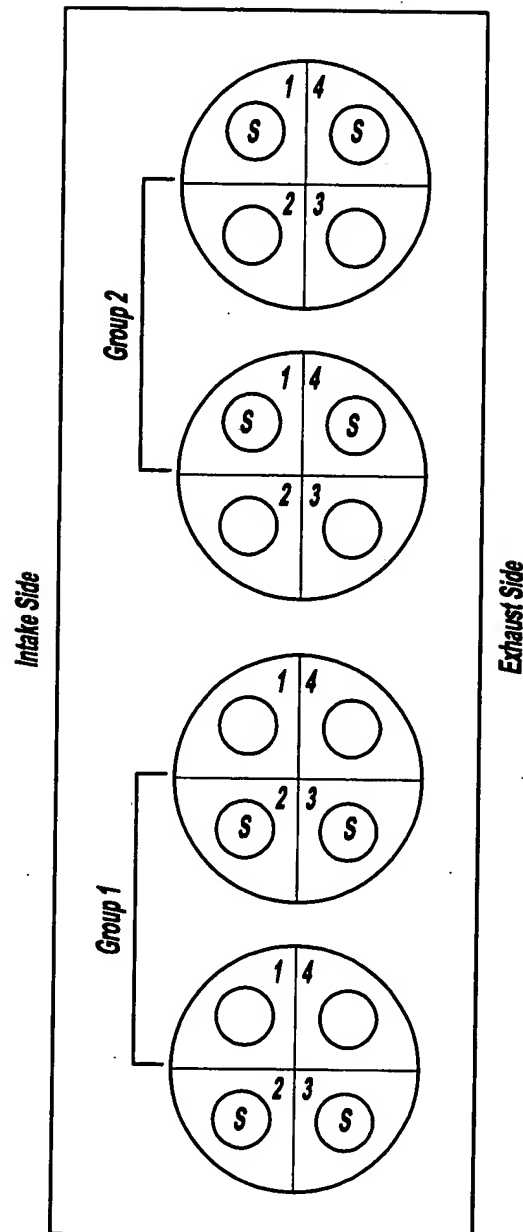


FIG - 26

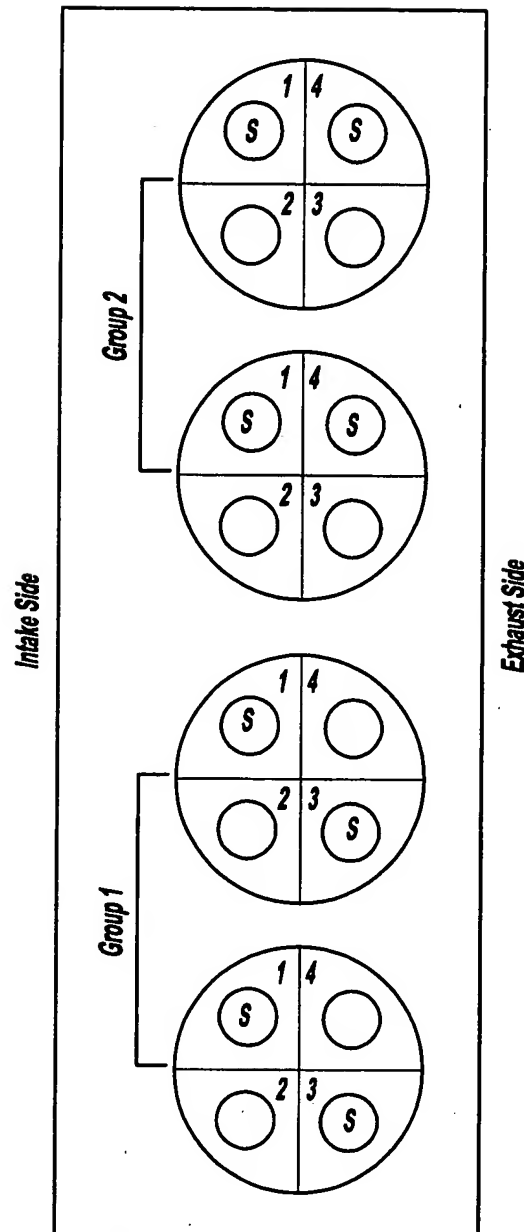
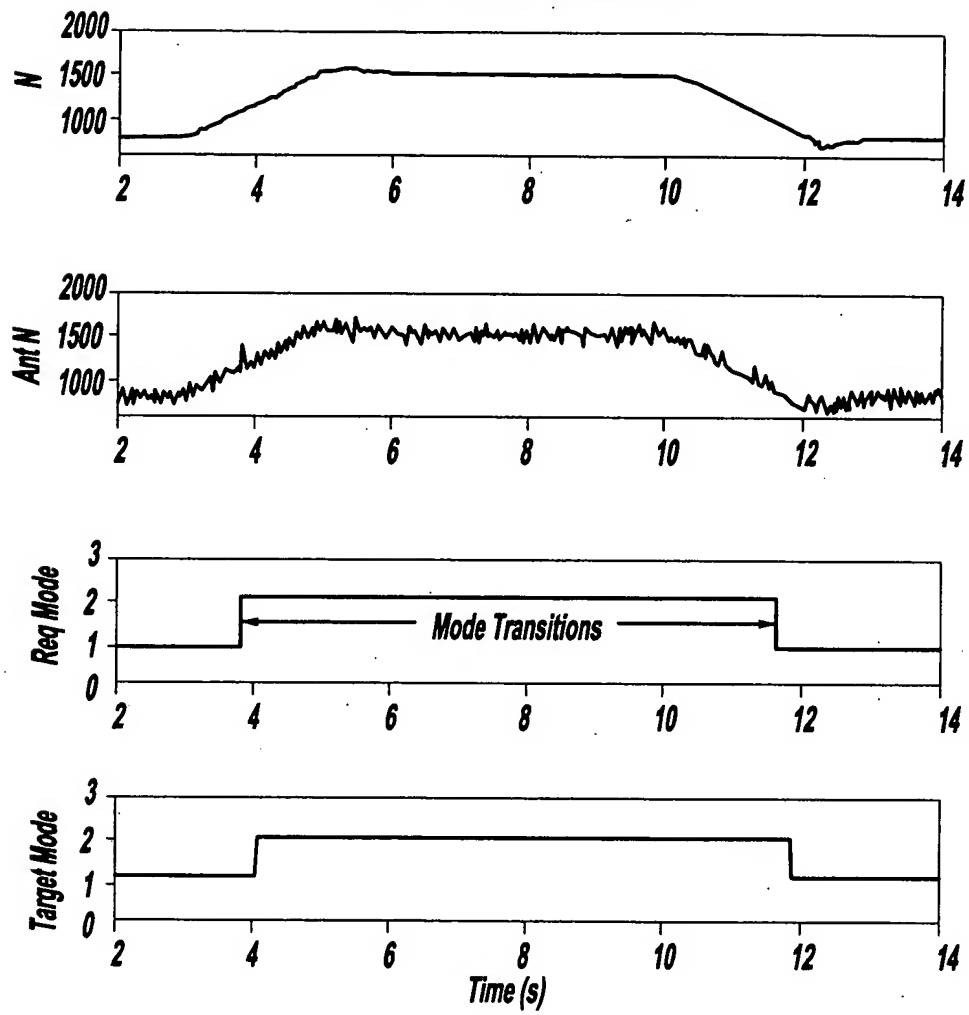
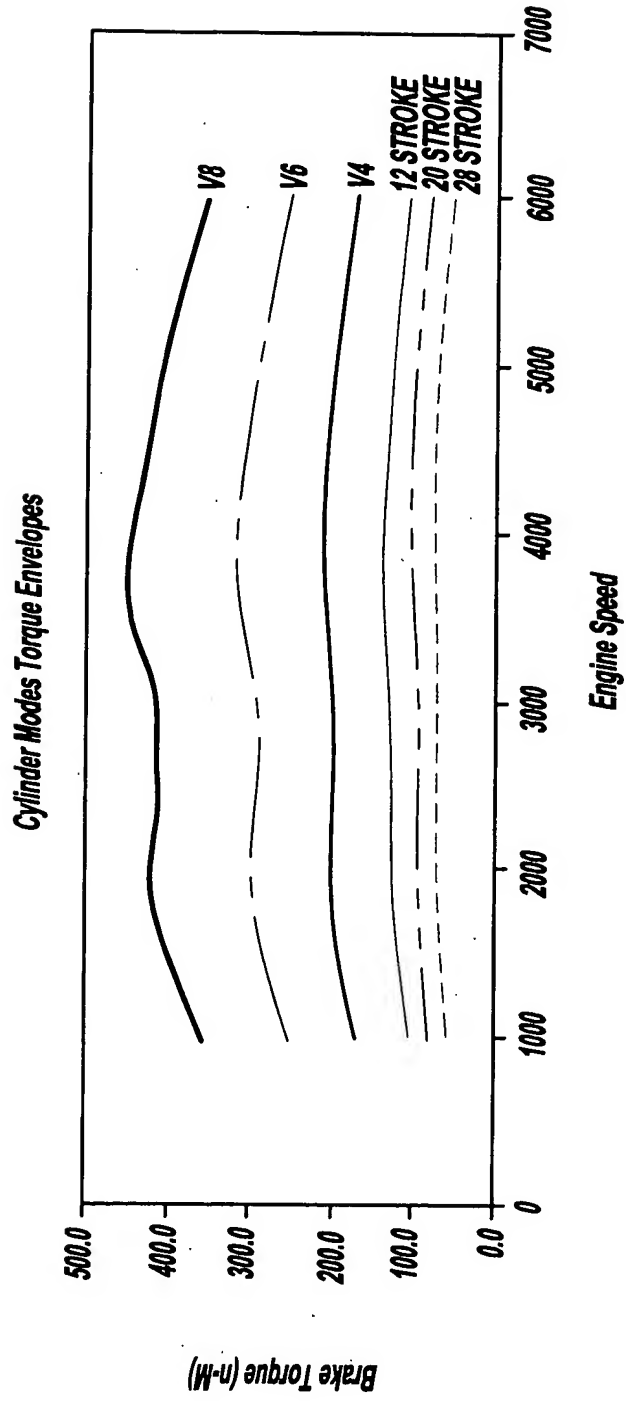


FIG - 27

Speed Dependant Mode Change**FIG - 28**

**FIG - 29**

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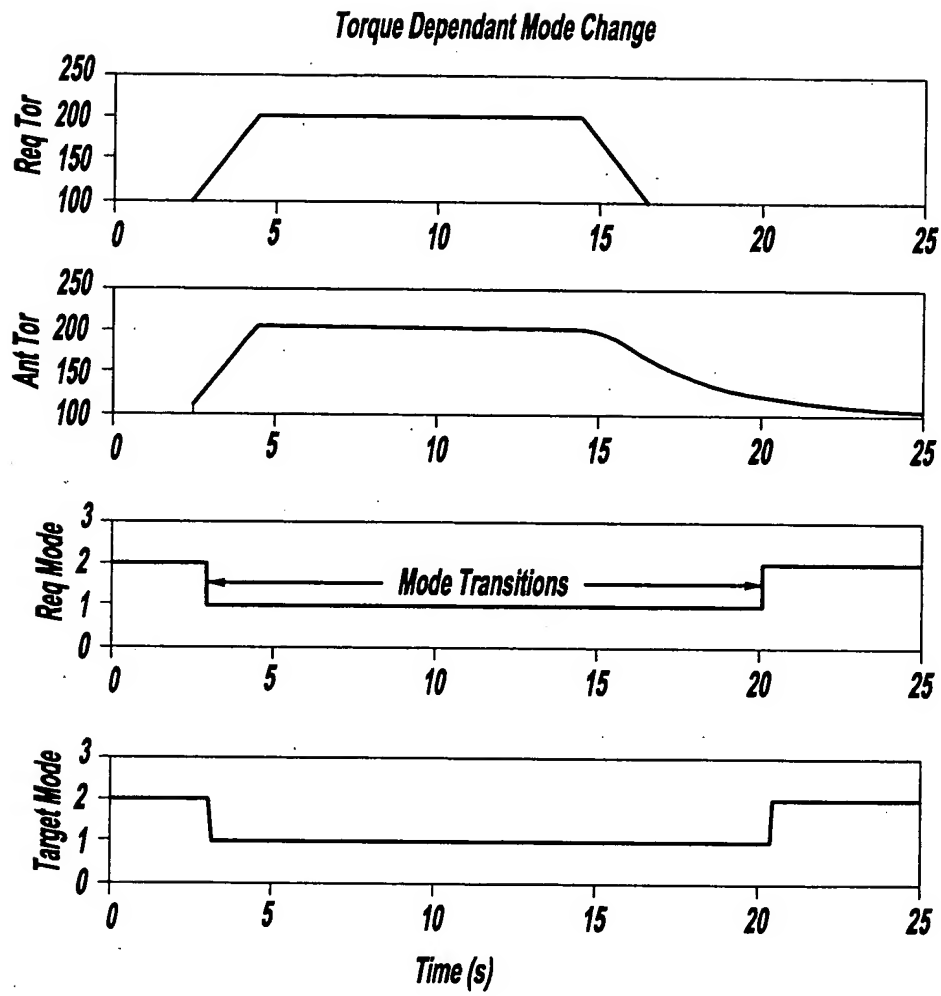
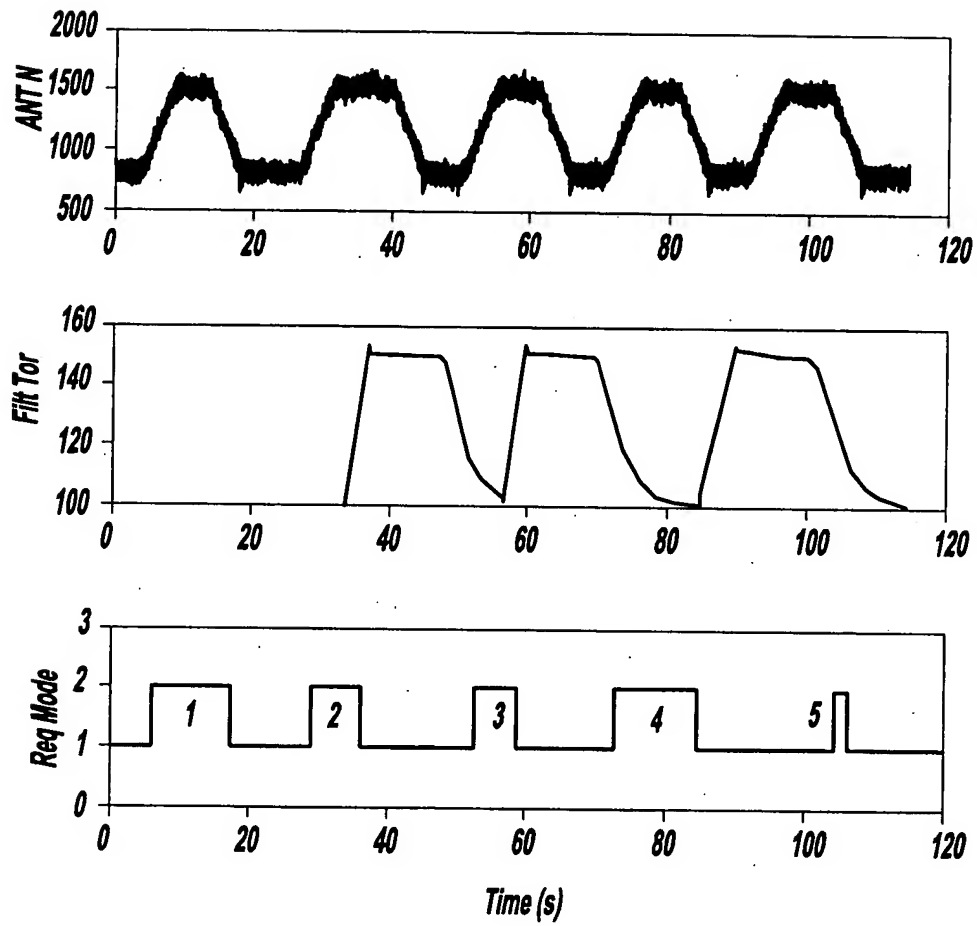
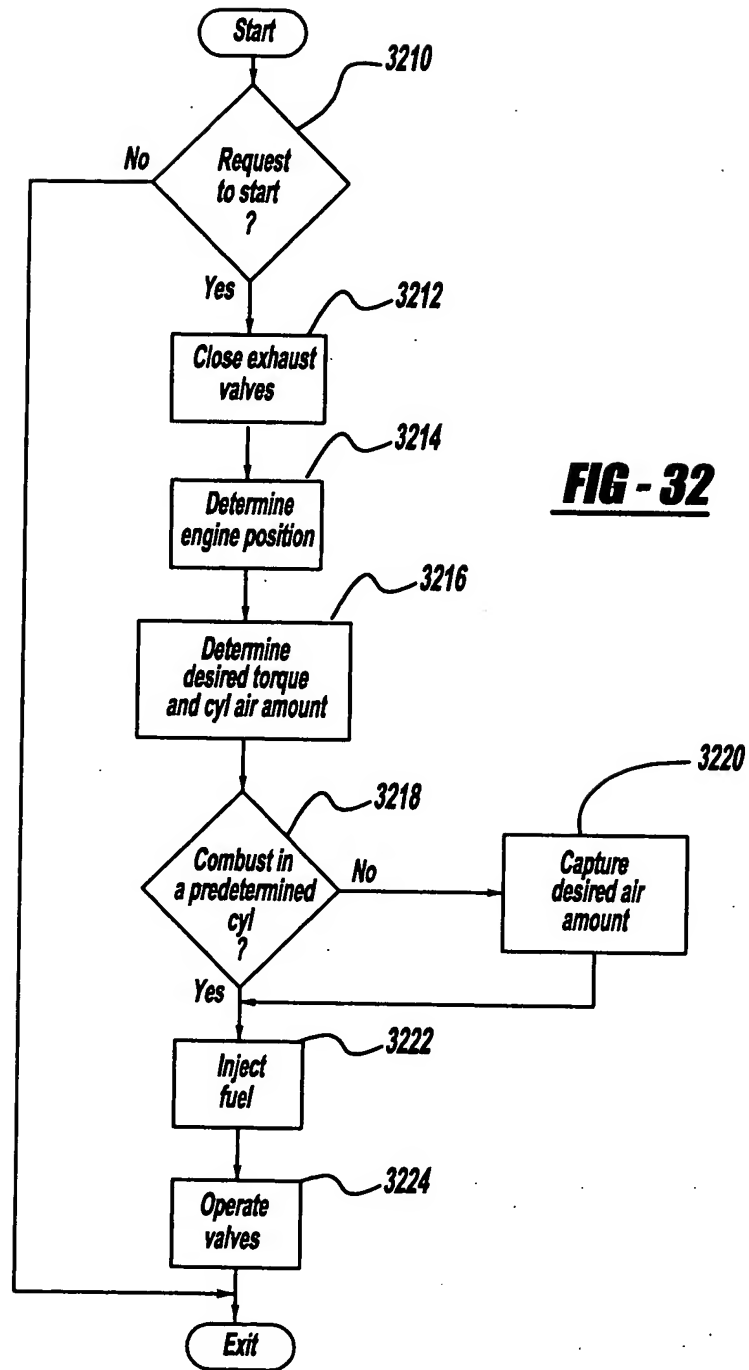


FIG - 30

Speed and Torque Dependant Mode Changes**FIG - 31**



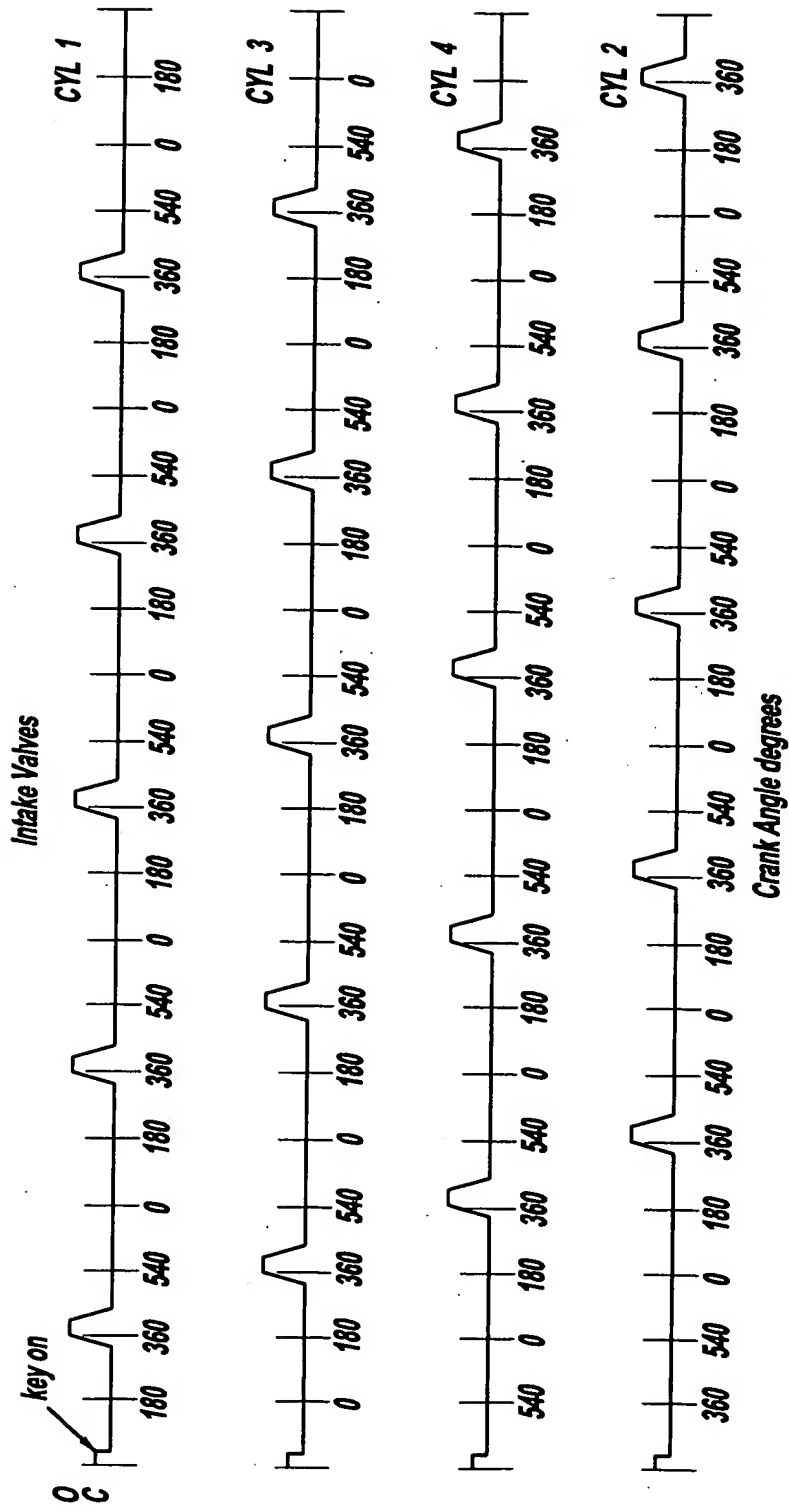


FIG - 33a

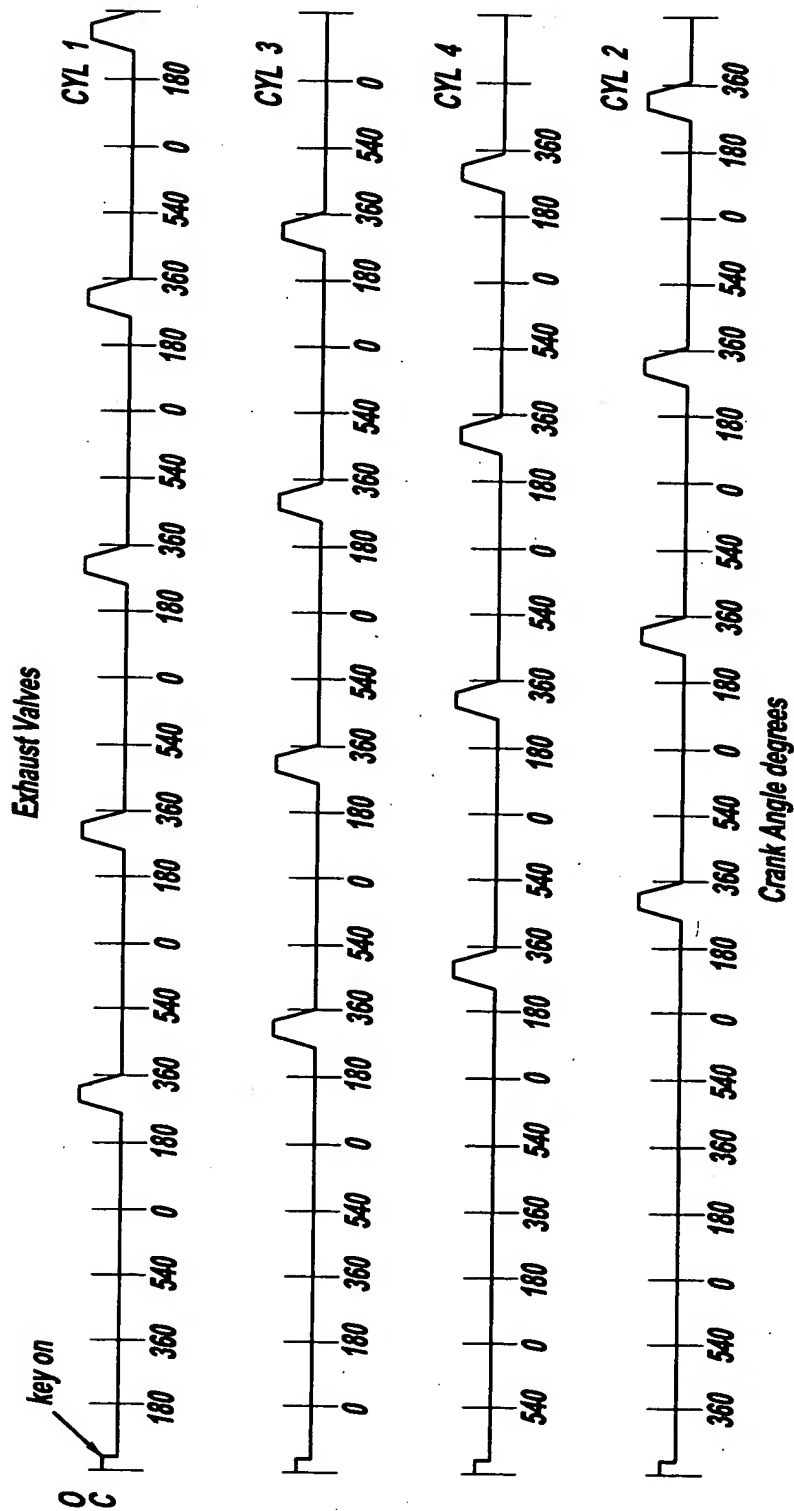


FIG - 33b

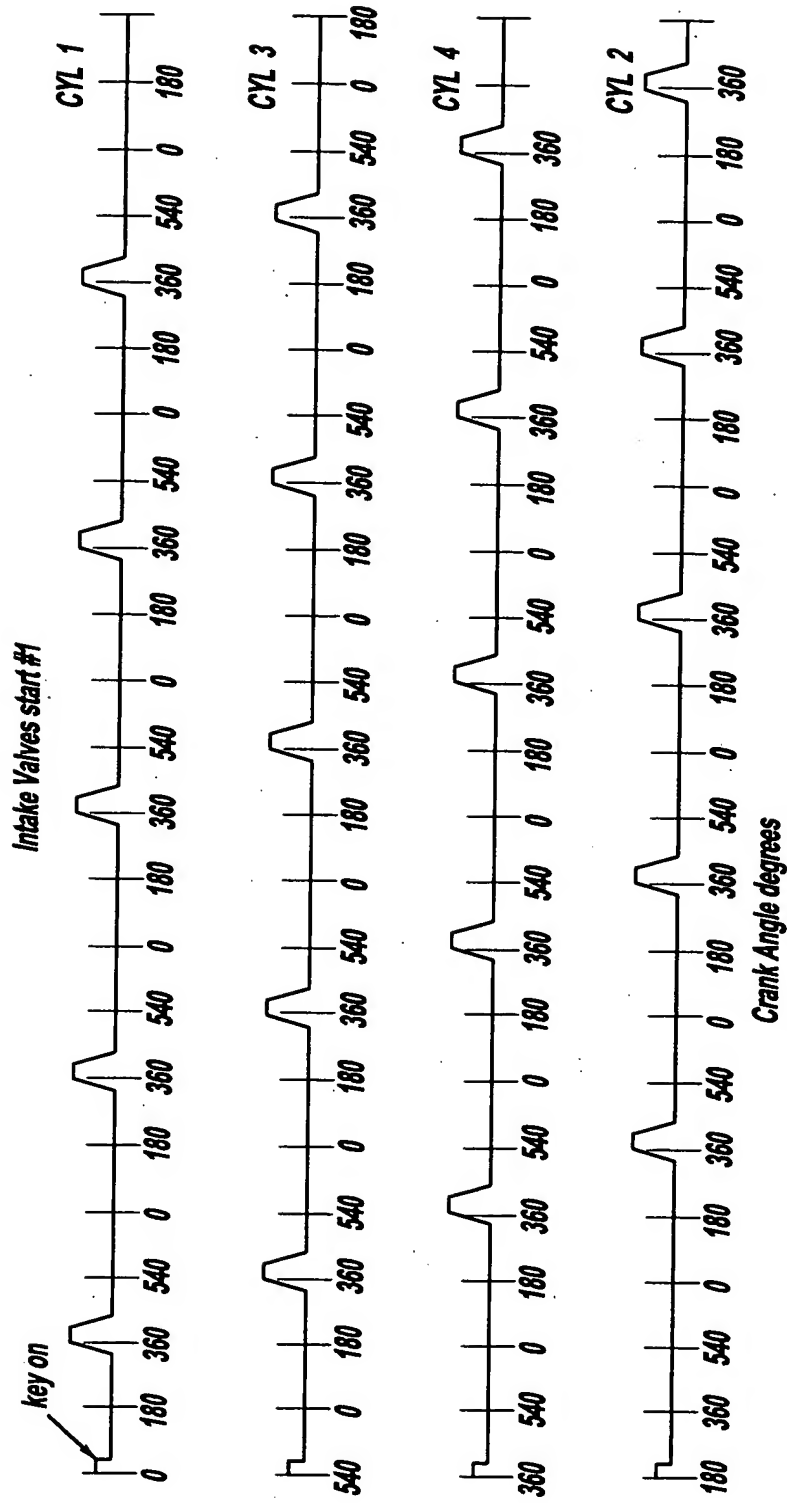
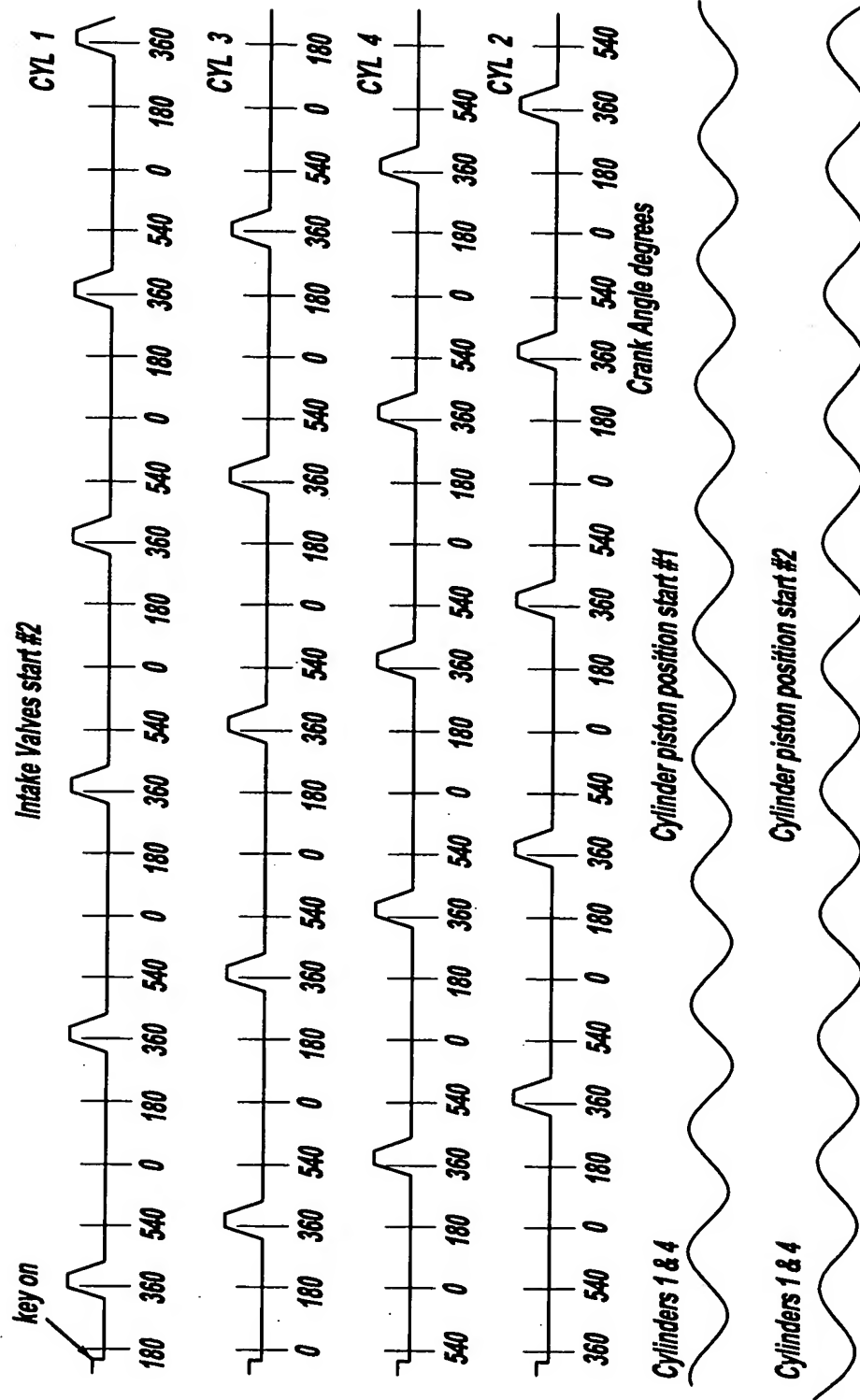


FIG - 34a

**FIG - 34b**

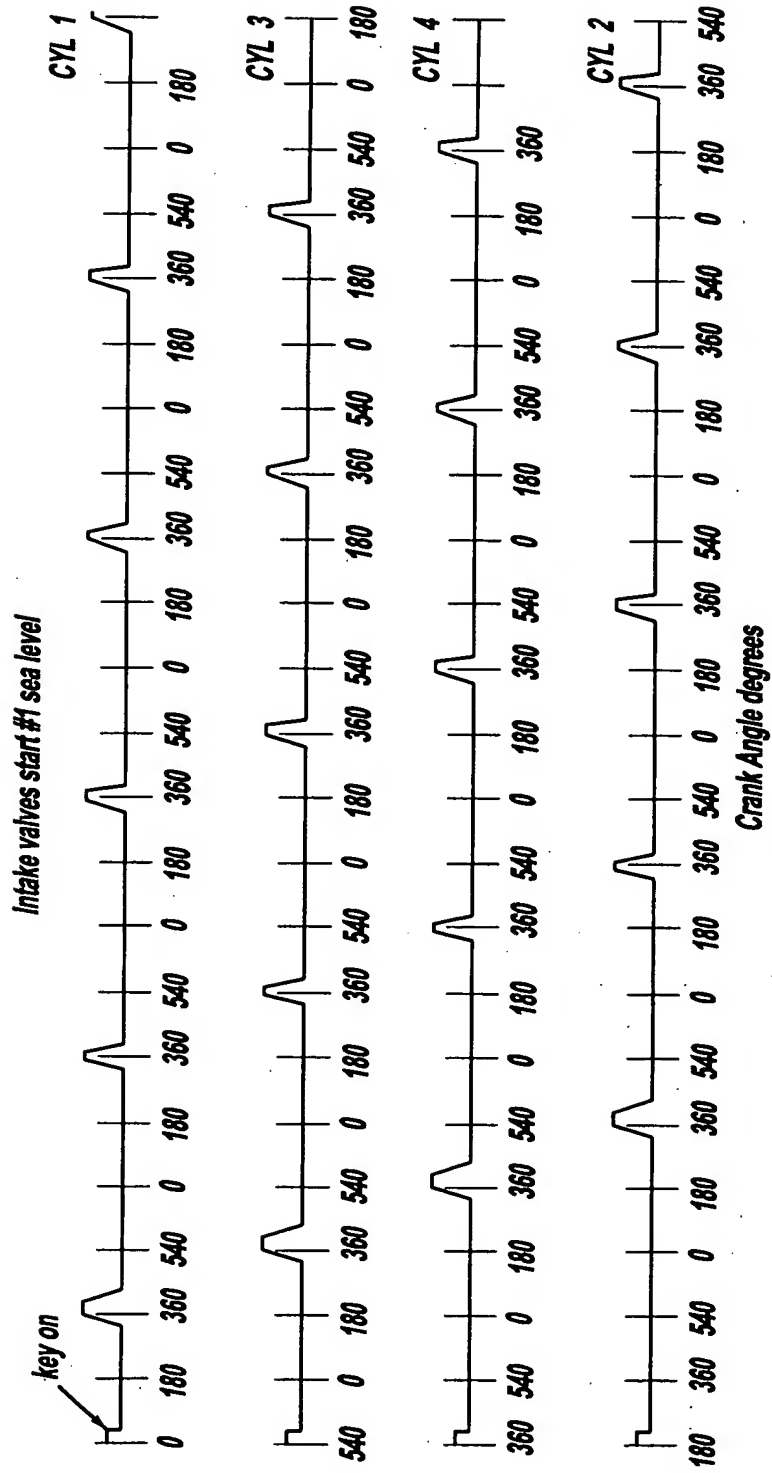
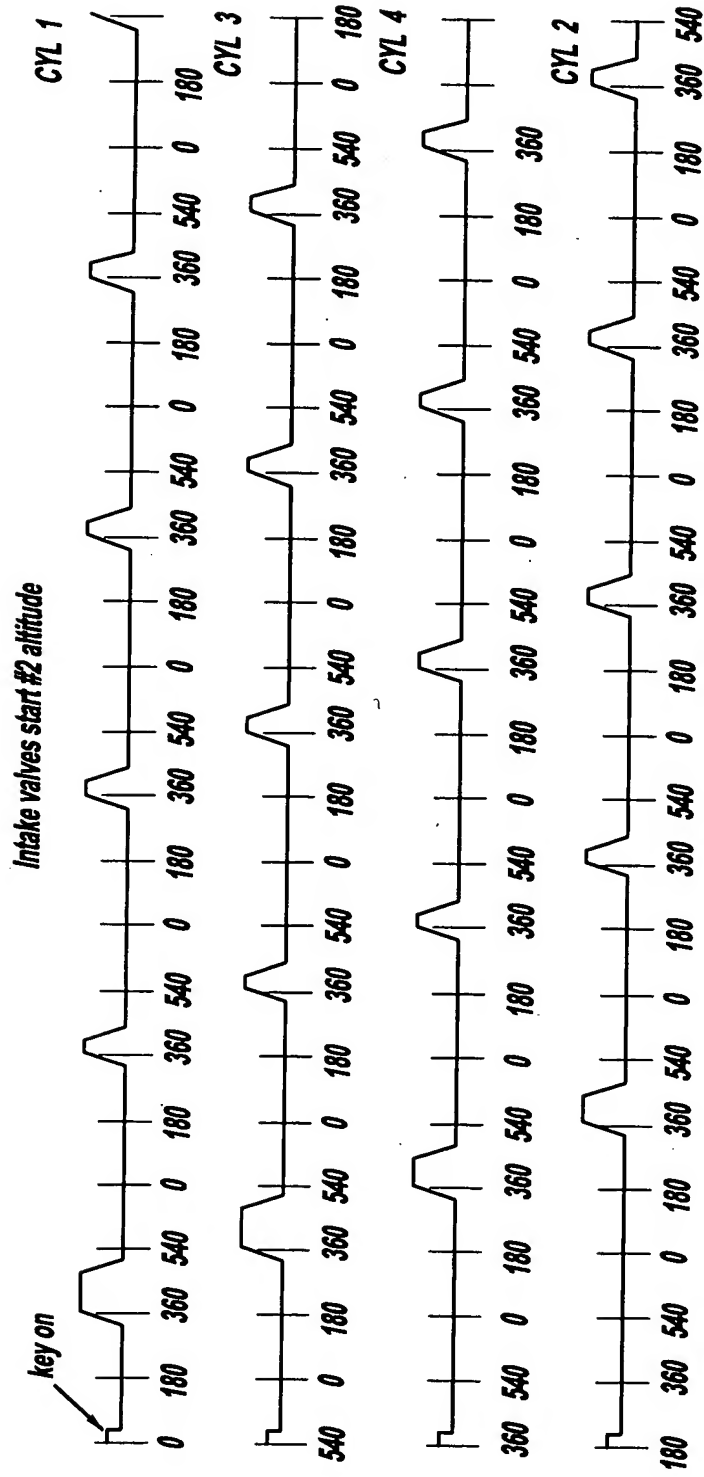
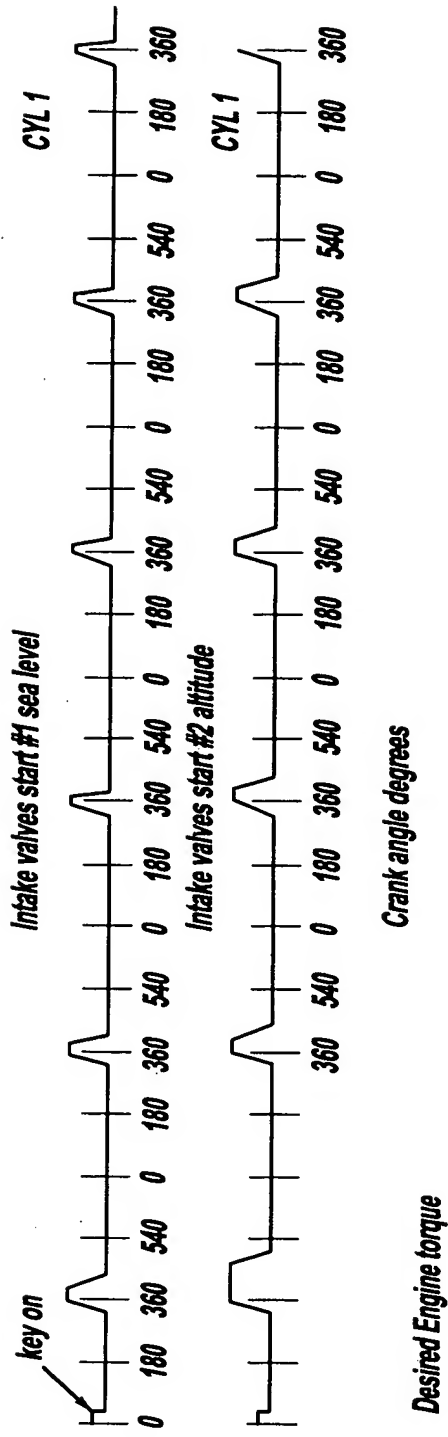


FIG - 35a

**FIG - 35b**



Desired Engine torque

Engine Speed

FIG - 36

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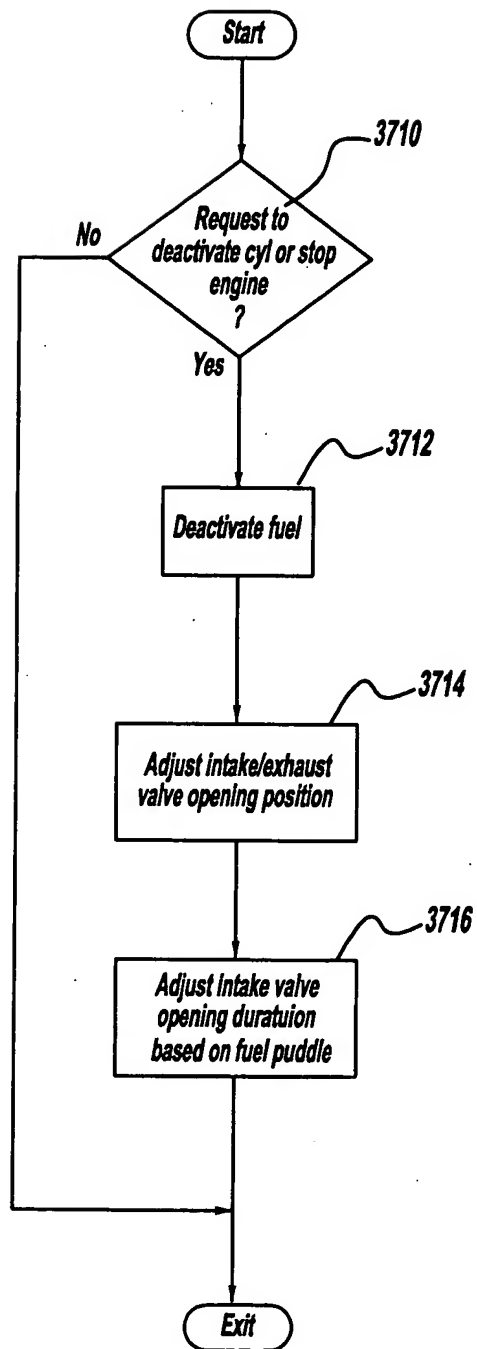
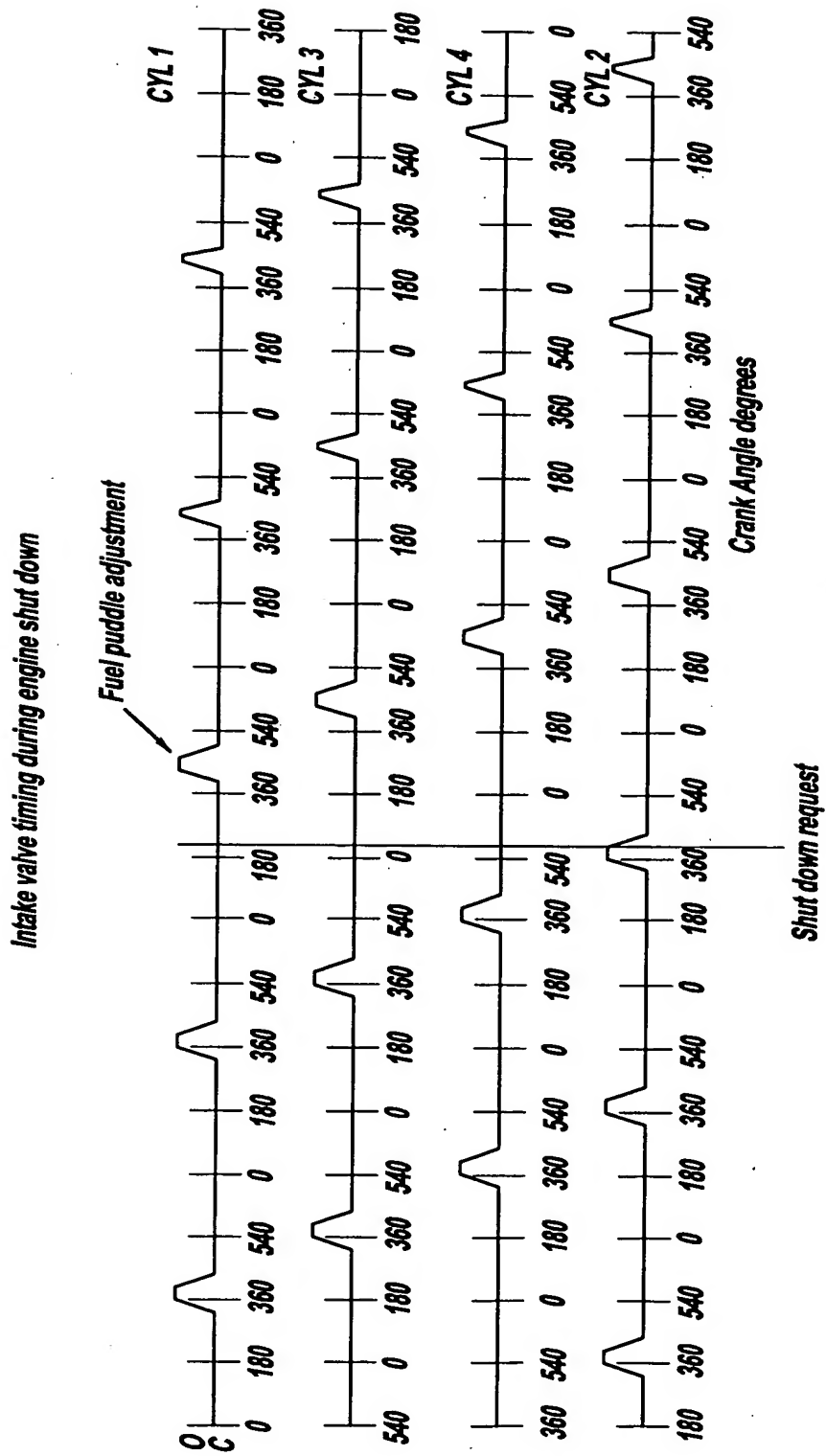
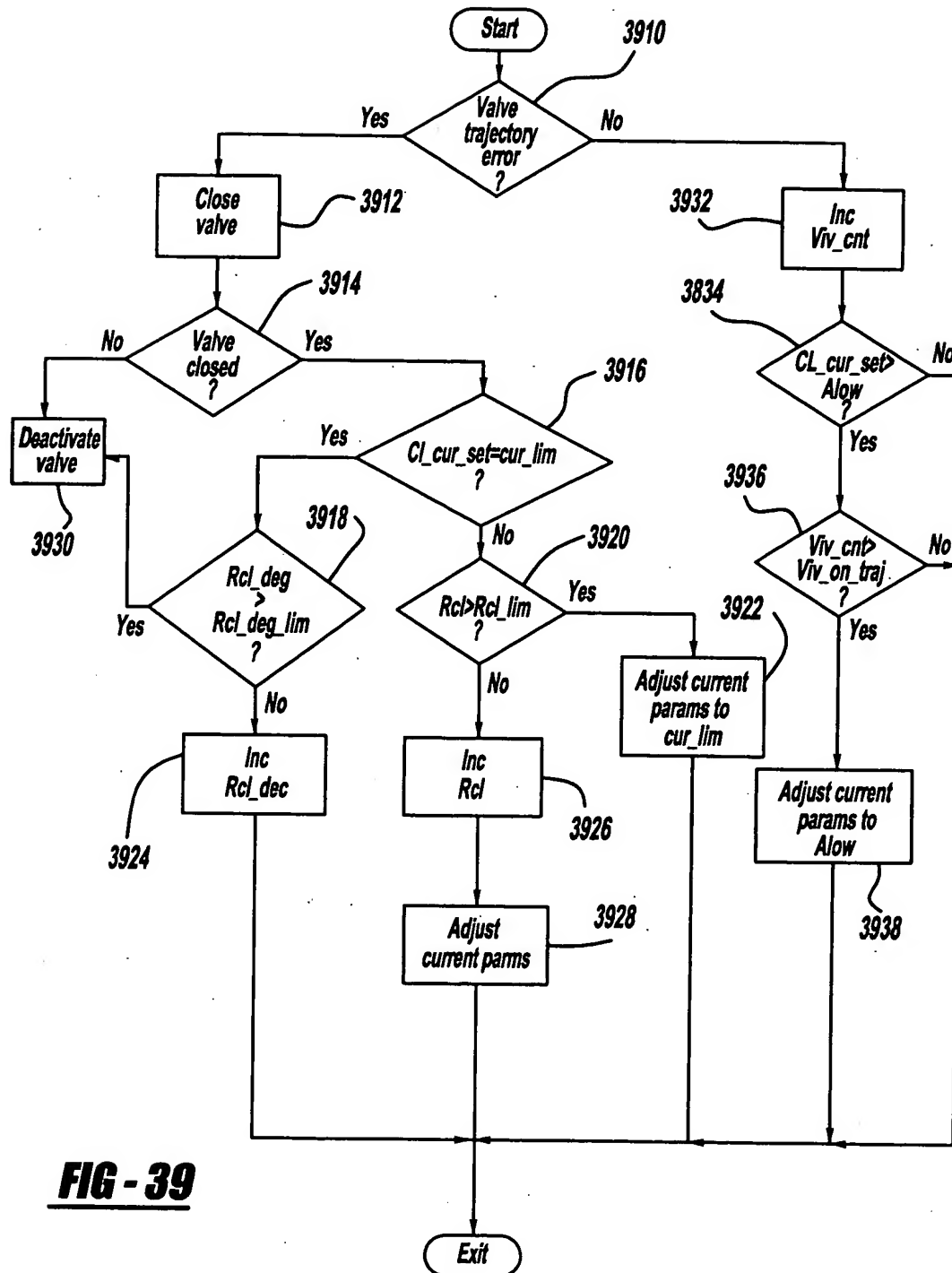


FIG - 37

**FIG - 38**



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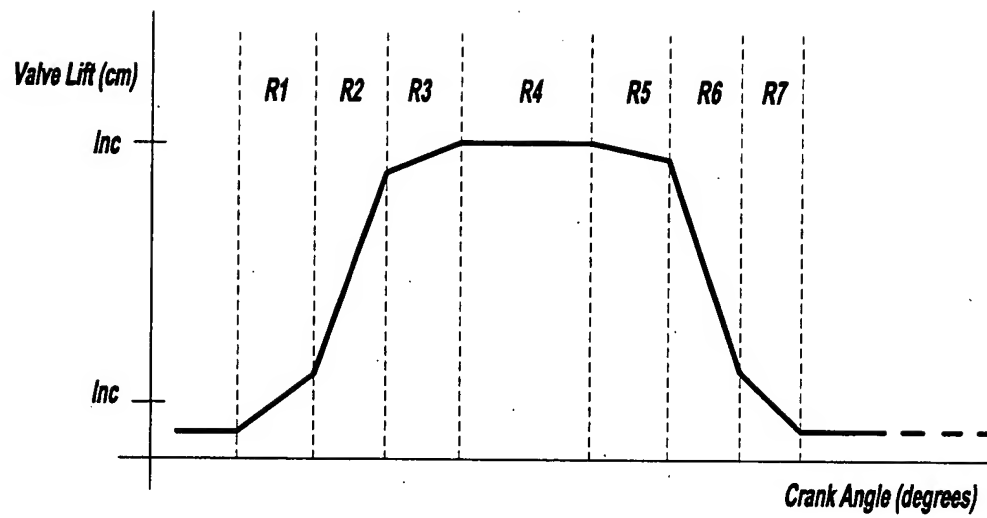
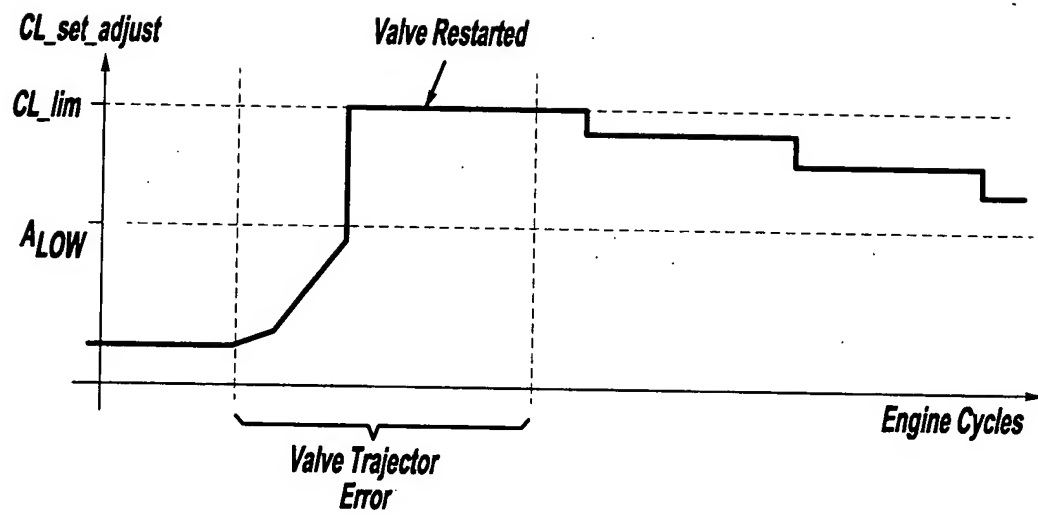
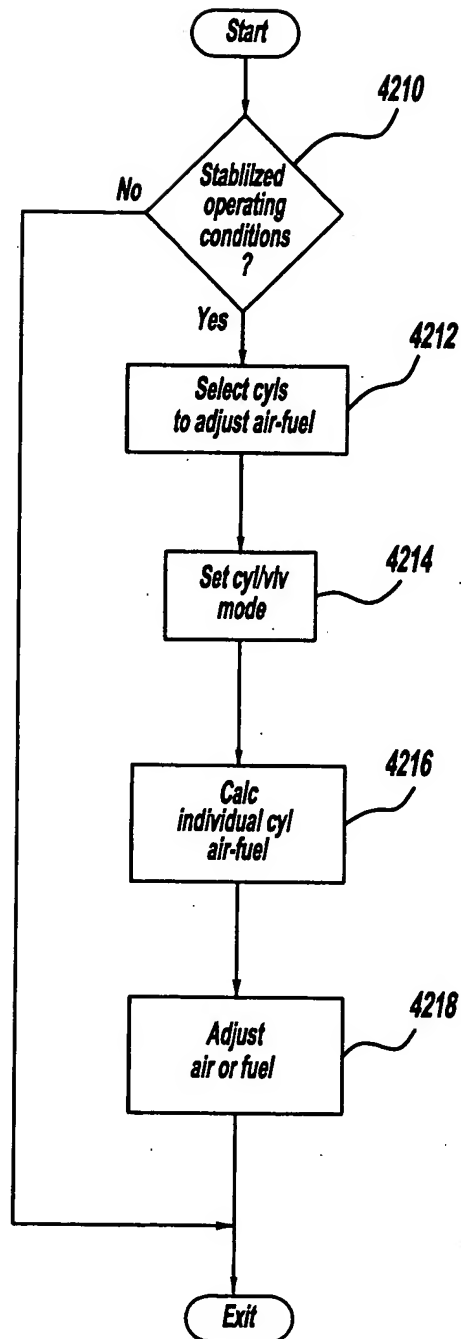


FIG - 40

**FIG - 41**

**FIG - 42**

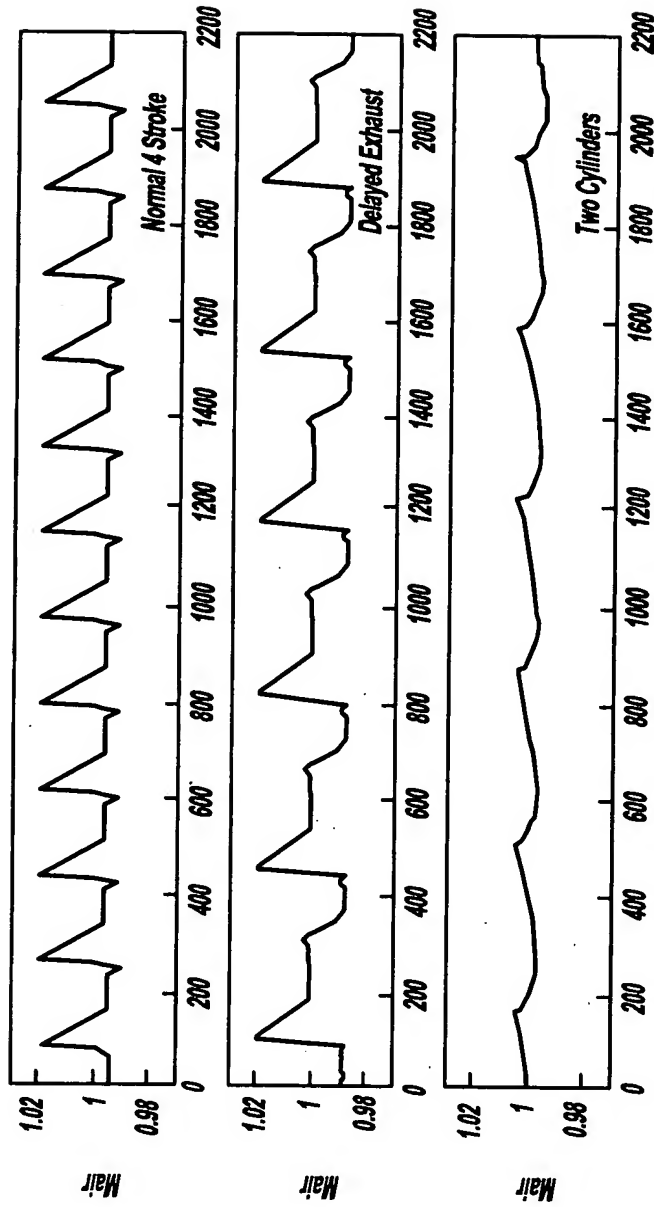


FIG - 43

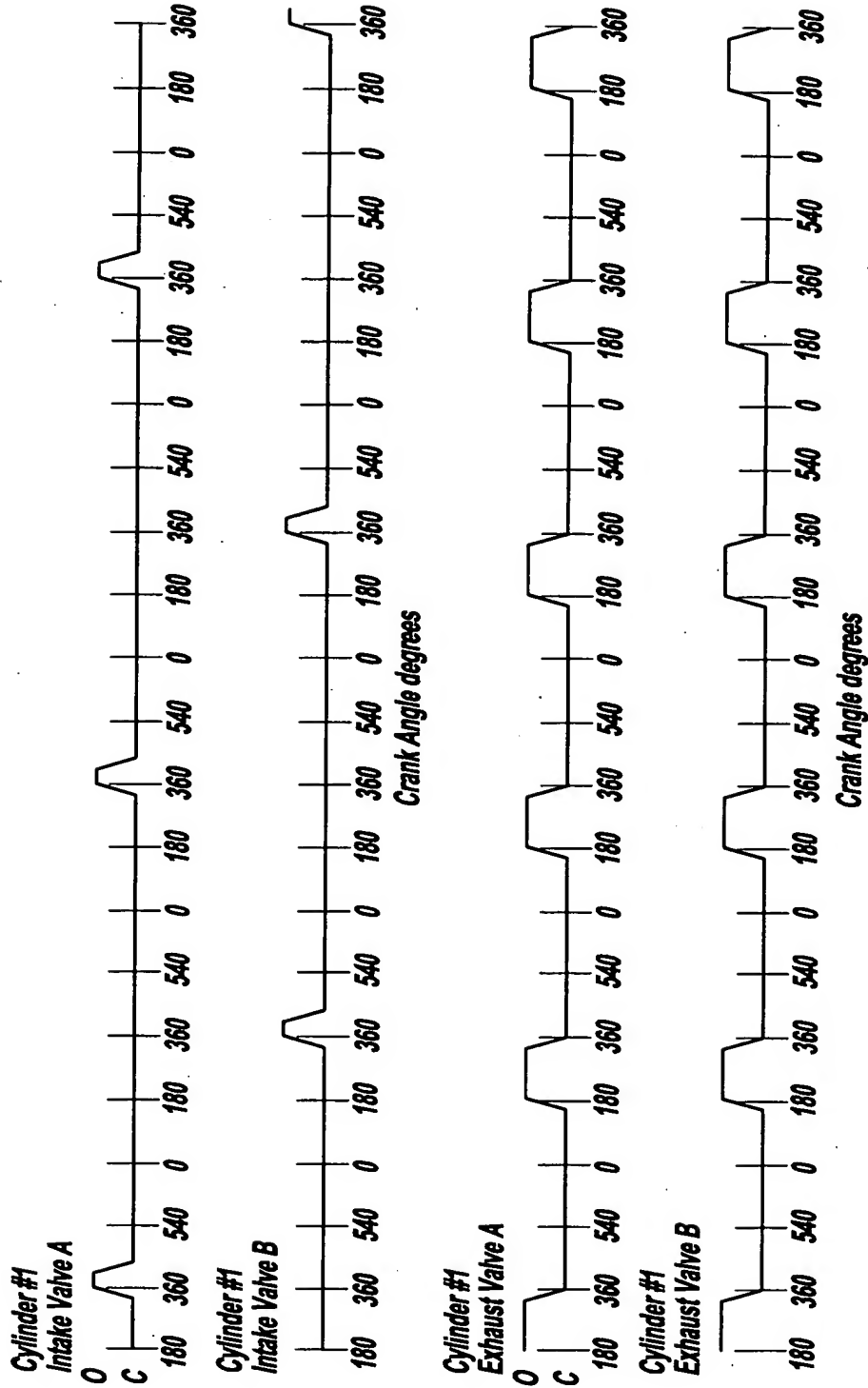
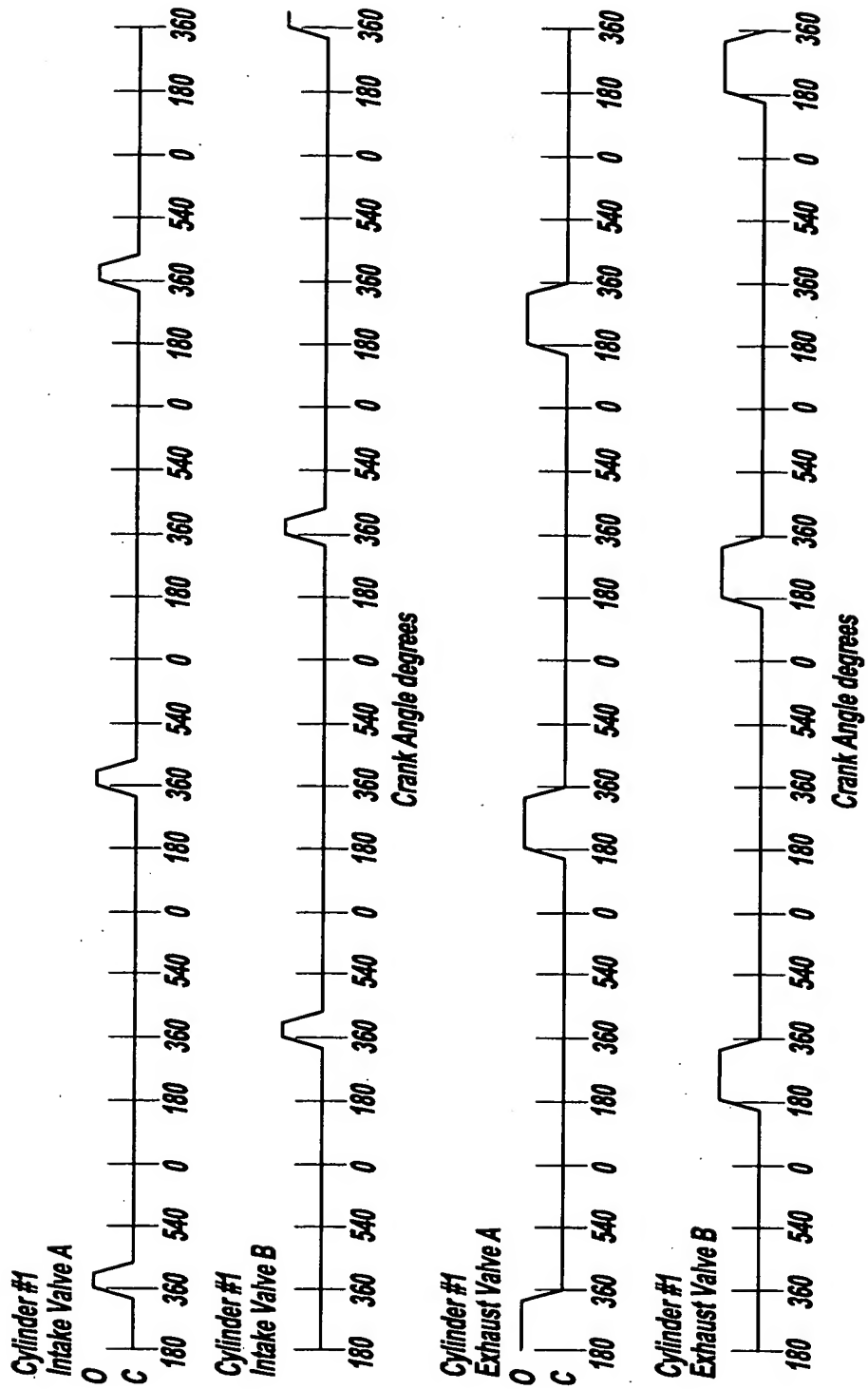


FIG - 44

**FIG - 45**

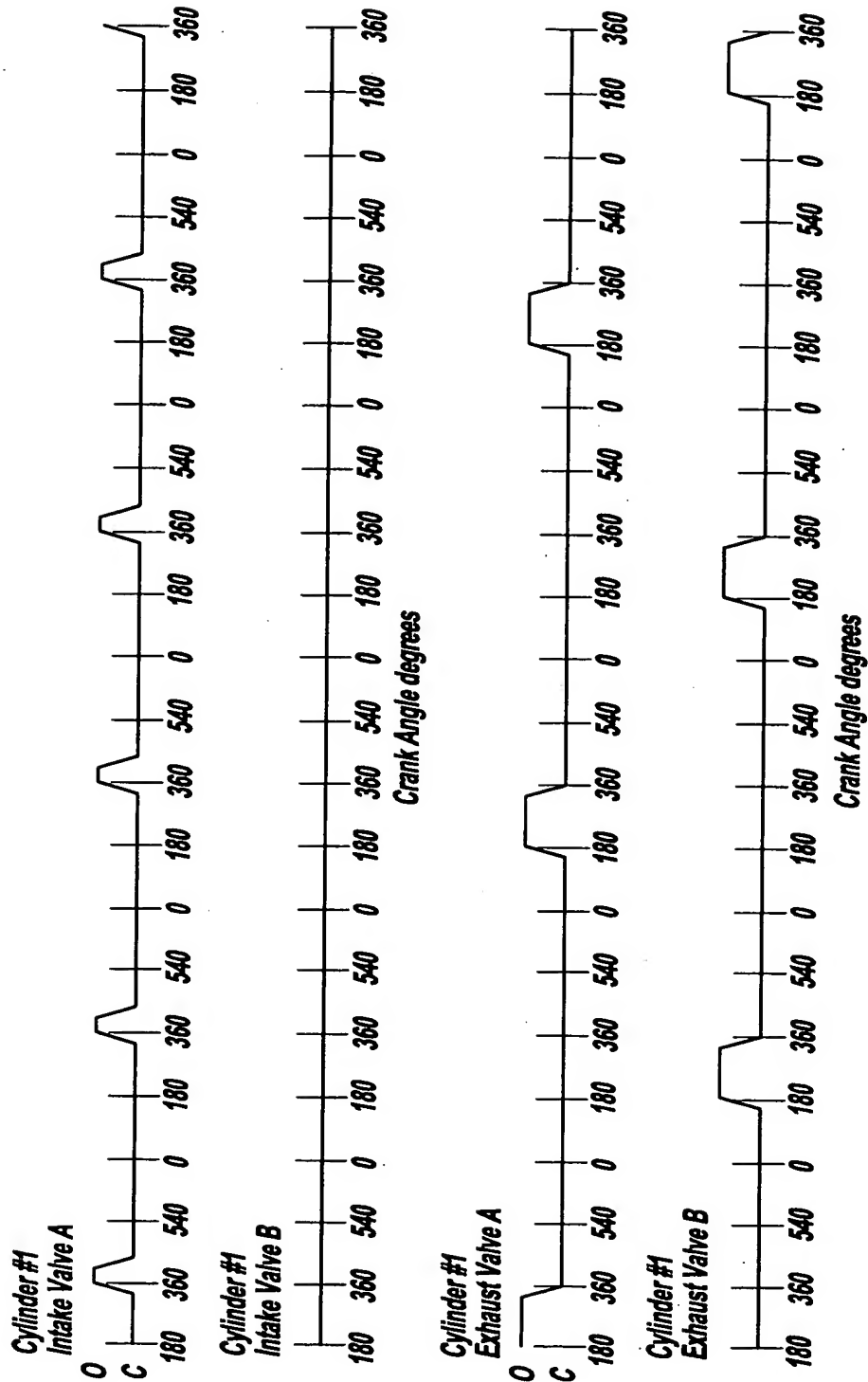
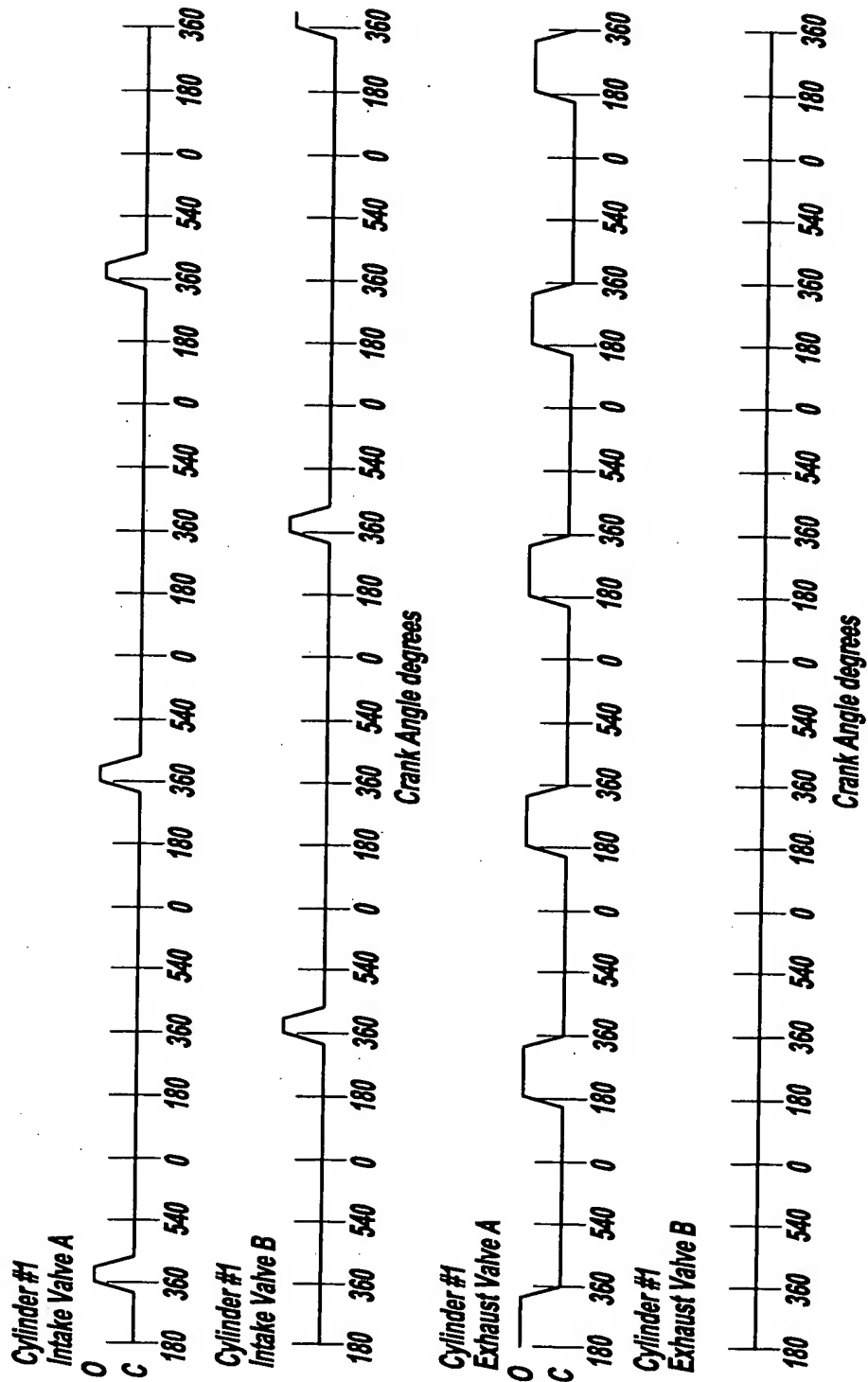


FIG - 46

**FIG - 47**

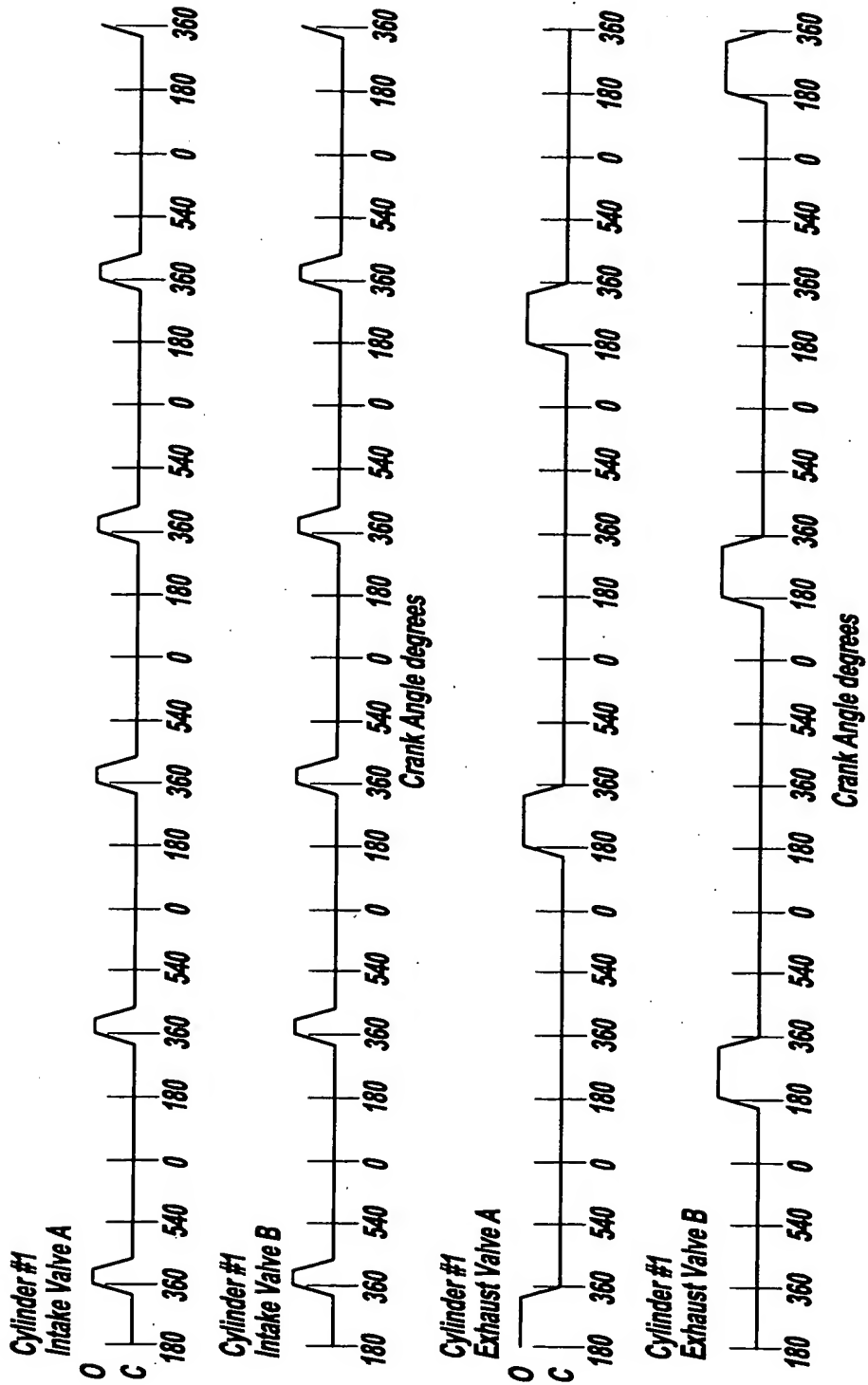
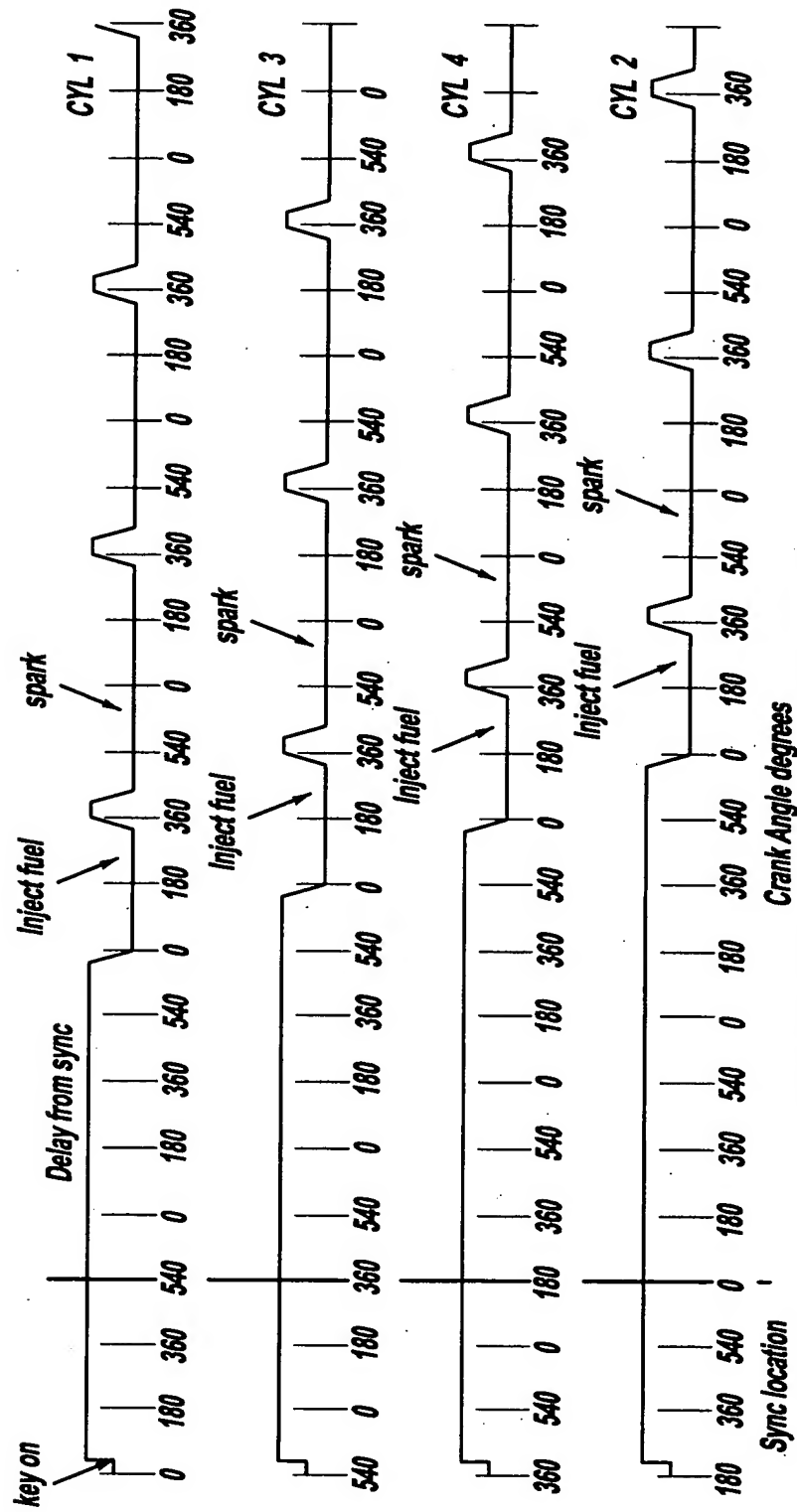
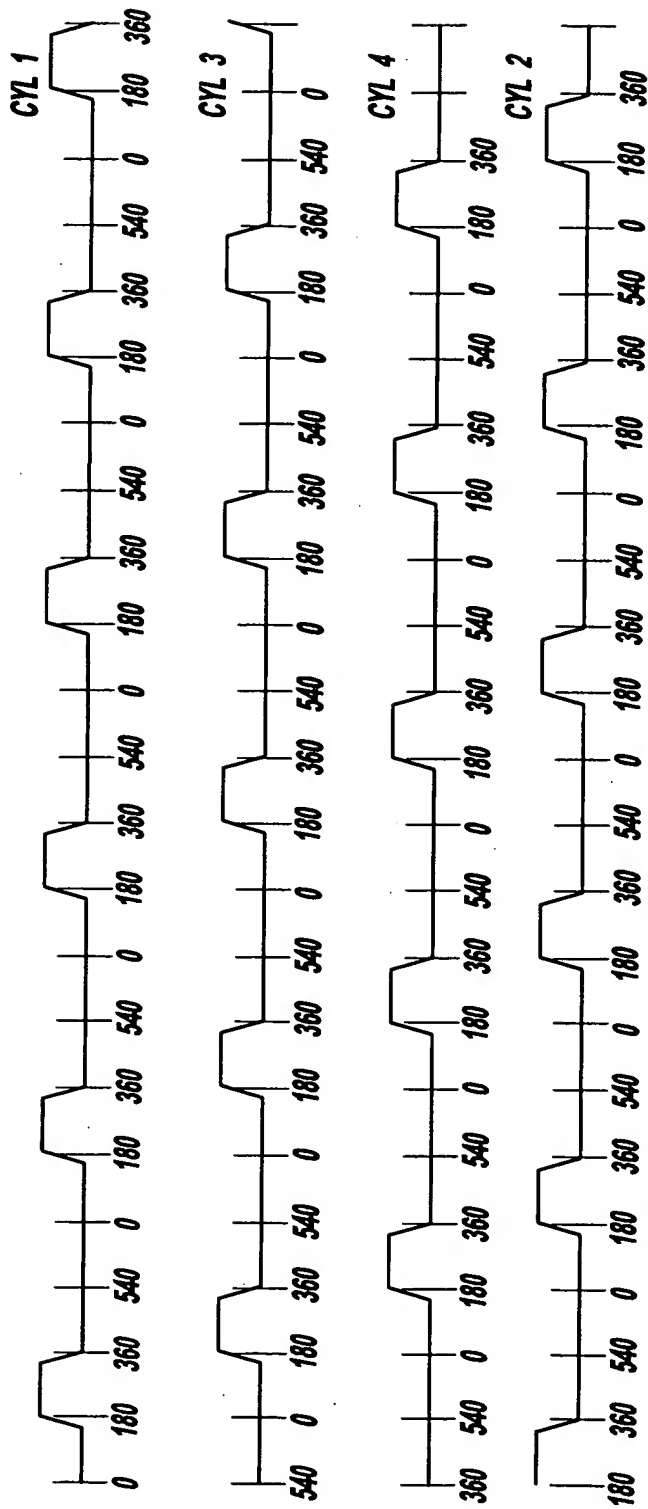


FIG - 48



Intake Valve Timing From Start (electrical valve operation)

FIG - 49a

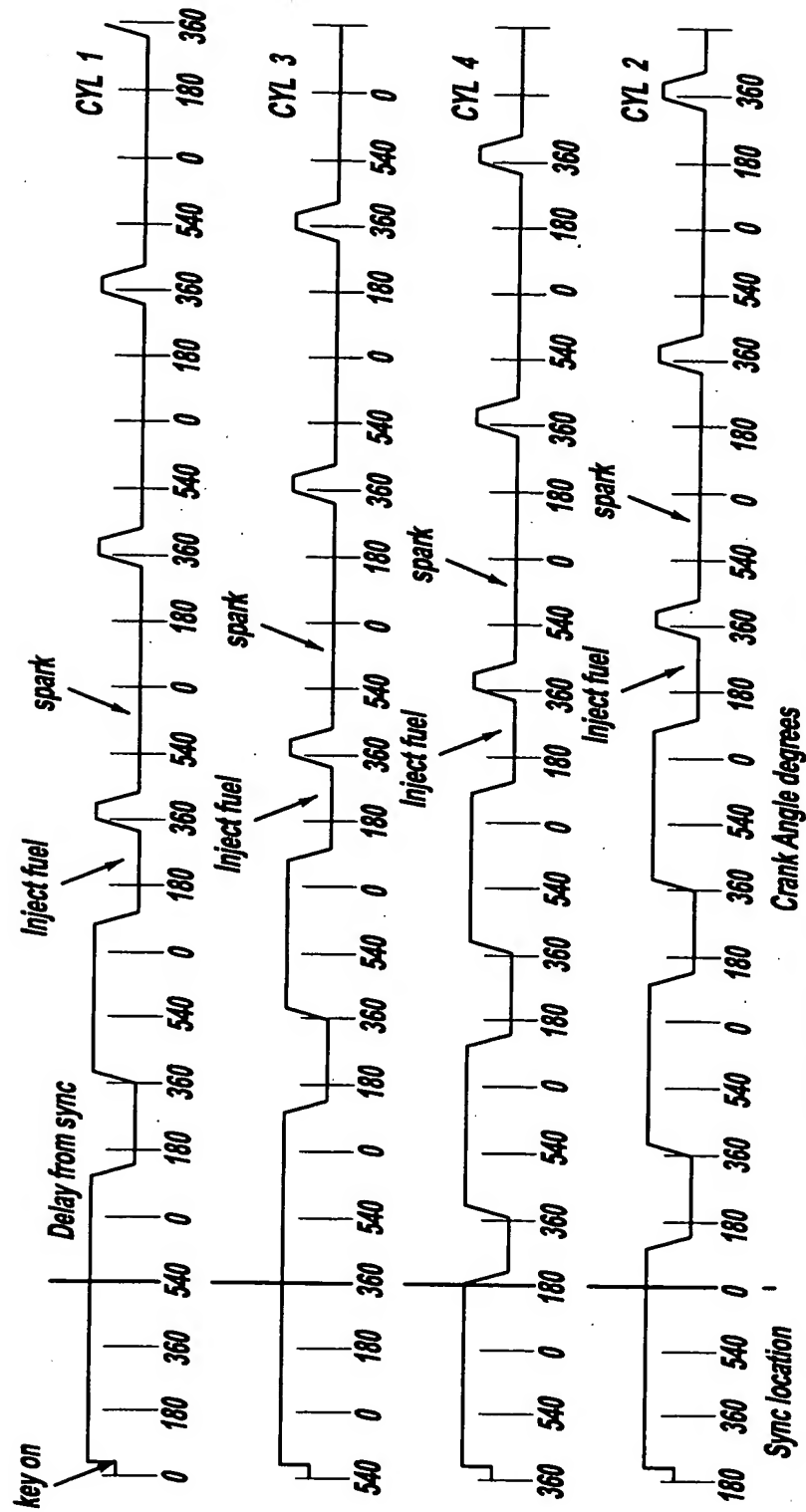


Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

Cylinder piston position cyl 1 & 4

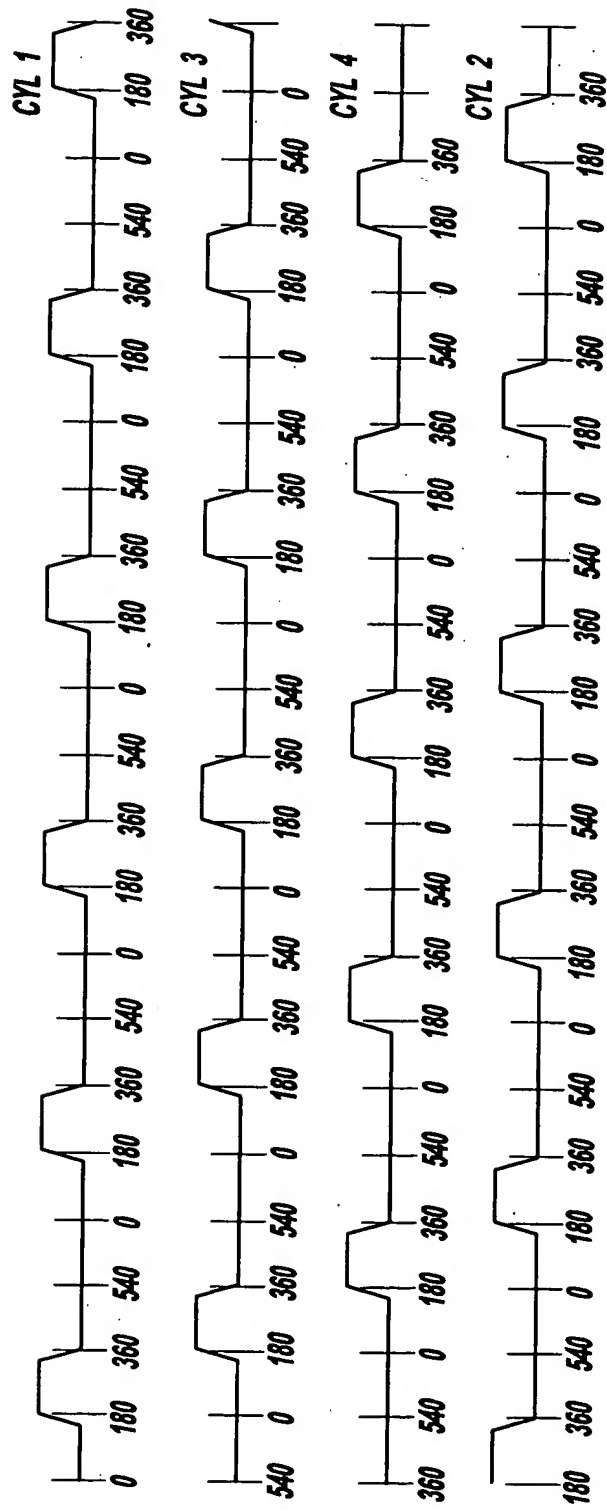
Cylinders 2 & 3

FIG - 49b



Intake Valve Timing From Start (electrical valve operation)

FIG - 50a

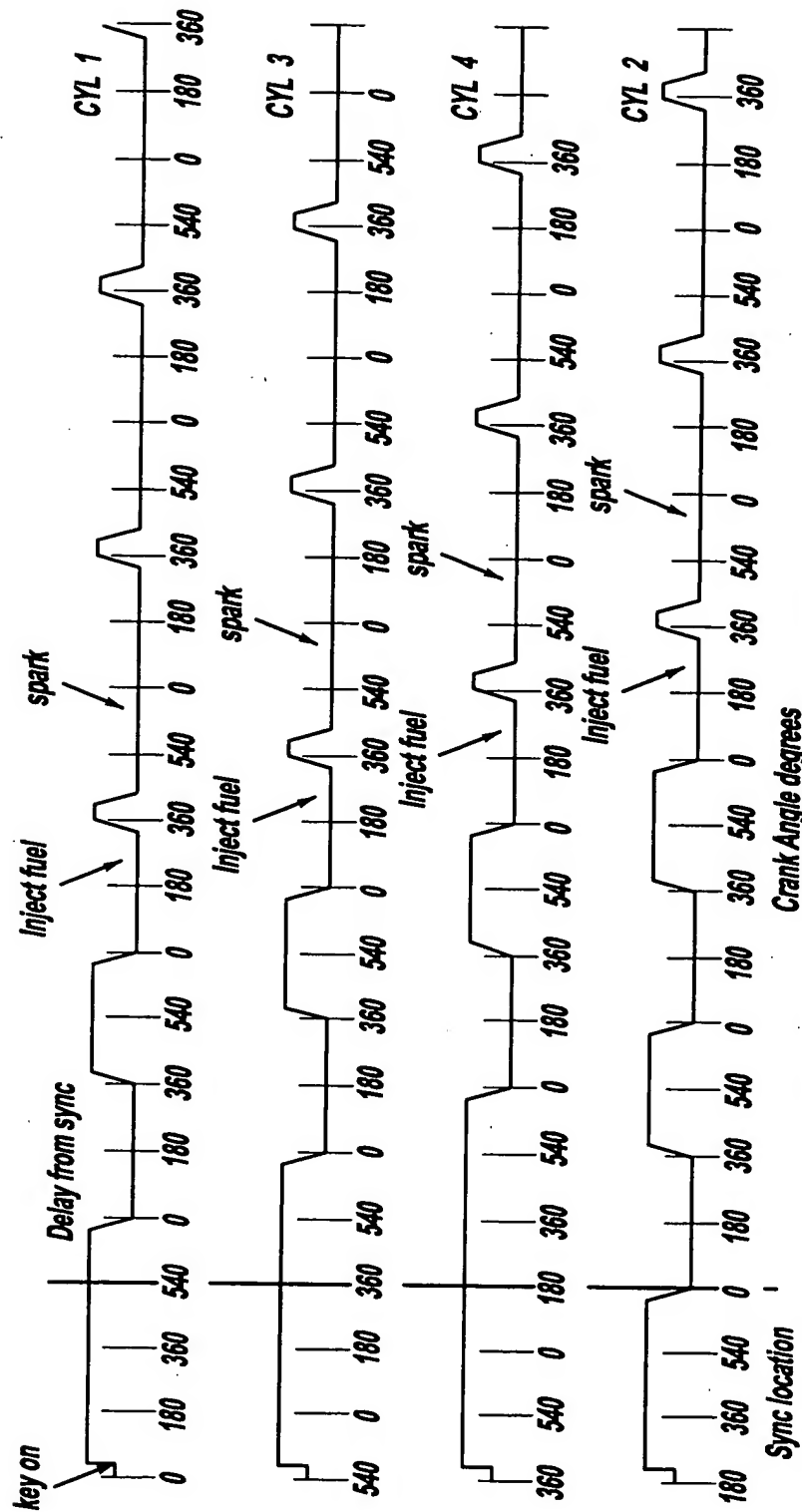


Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

Cylinder piston position cyl 1 & 4

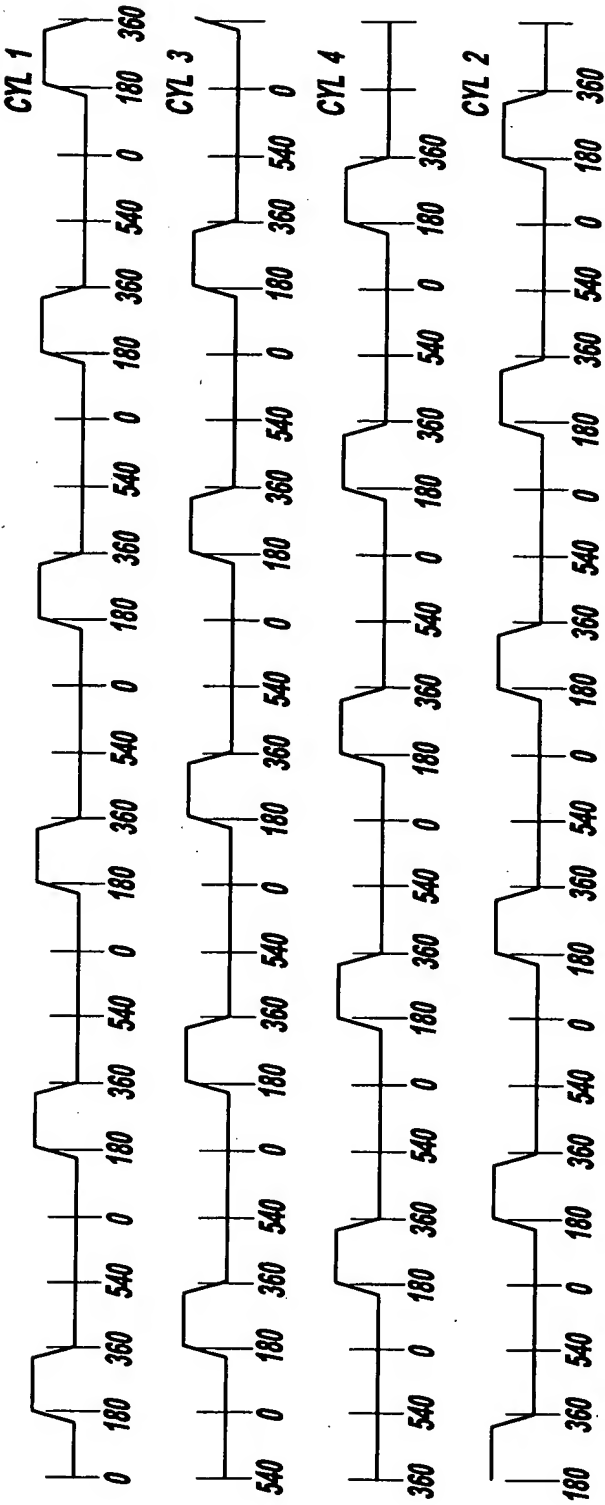
Cylinders 2 & 3

FIG - 50b



Intake Valve Timing From Start (electrical valve operation)

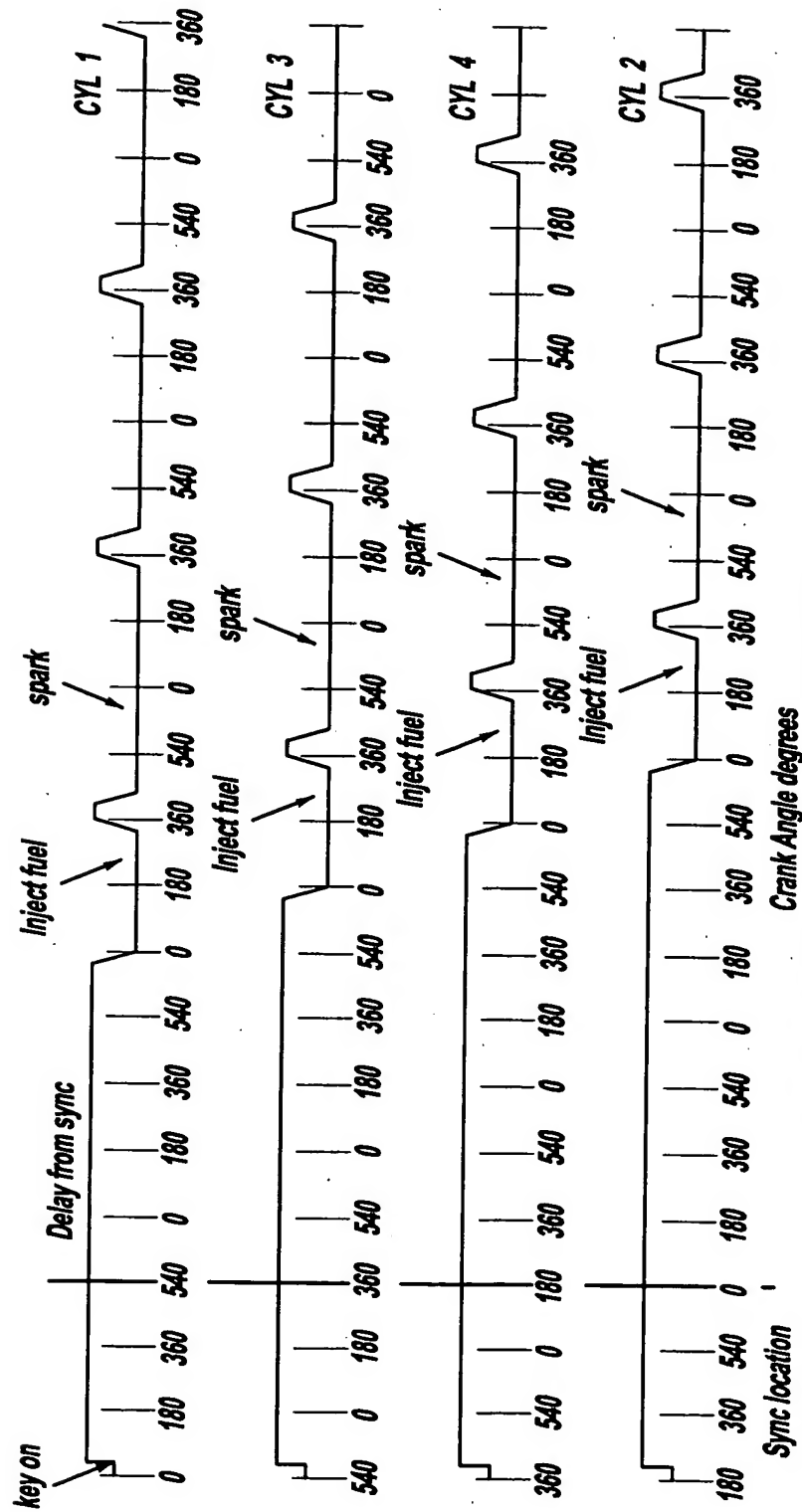
FIG - 51a

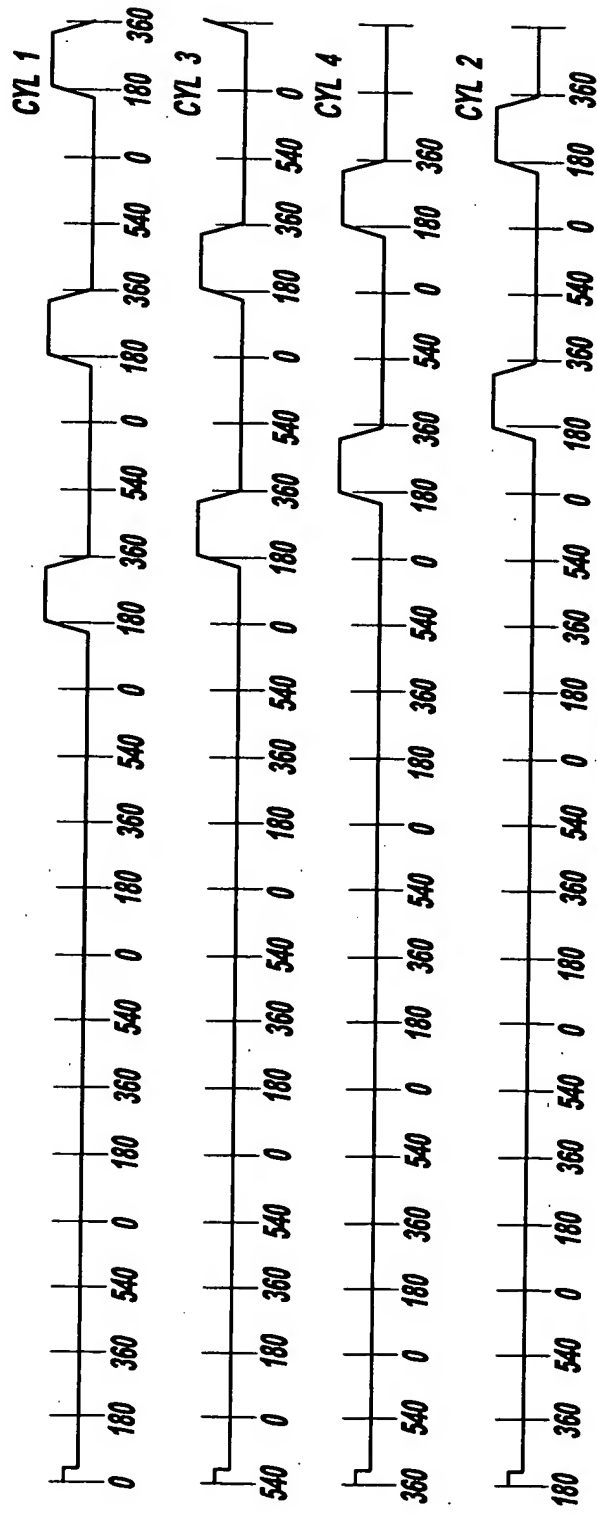


Cylinder piston position cyl 1 & 4

Cylinders 2 & 3

FIG - 51b

**FIG - 52a**

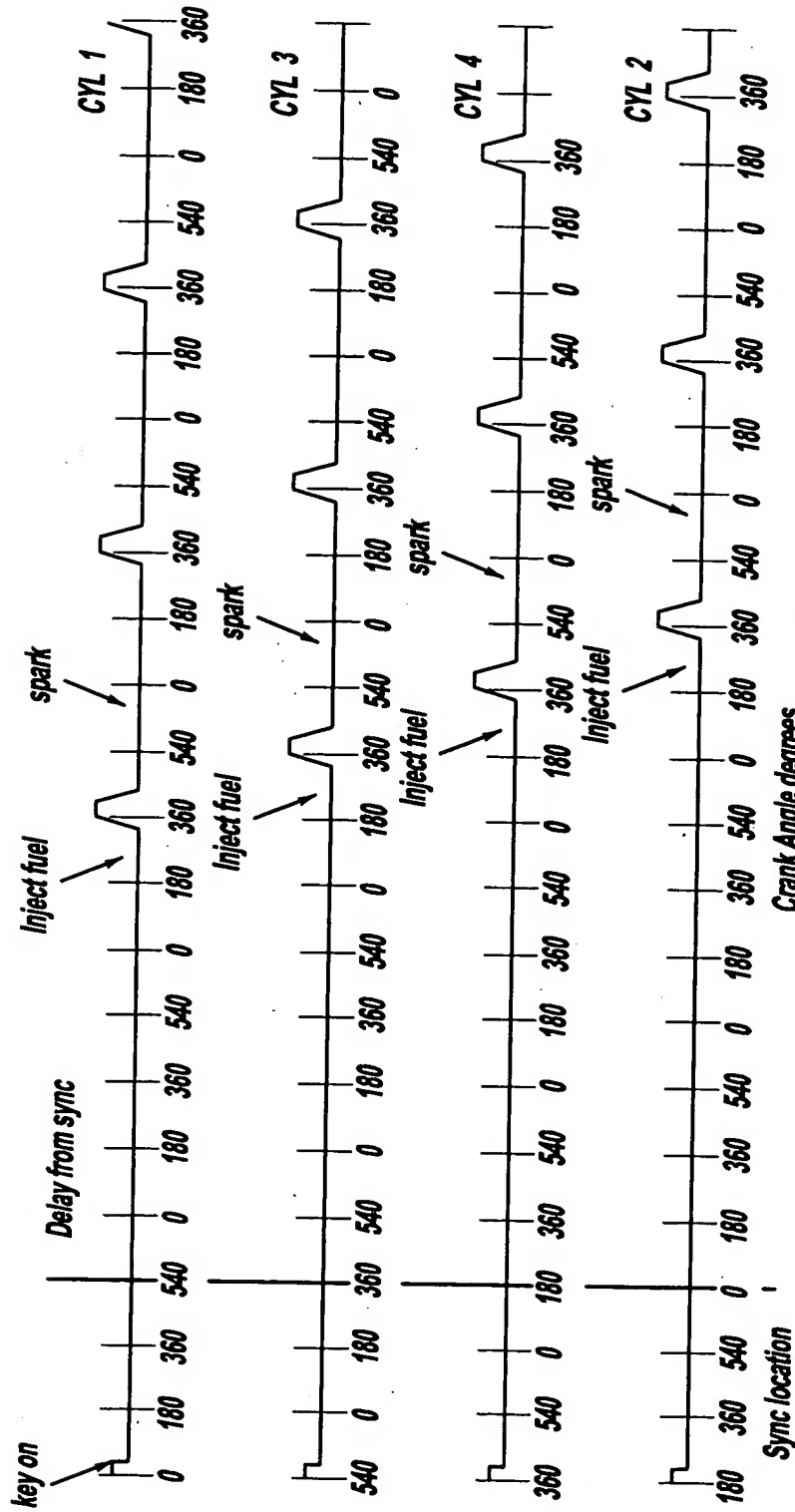


Exhaust Valve Timing From Start (electrical valve operation)

Cylinder piston position cyl 1 & 4

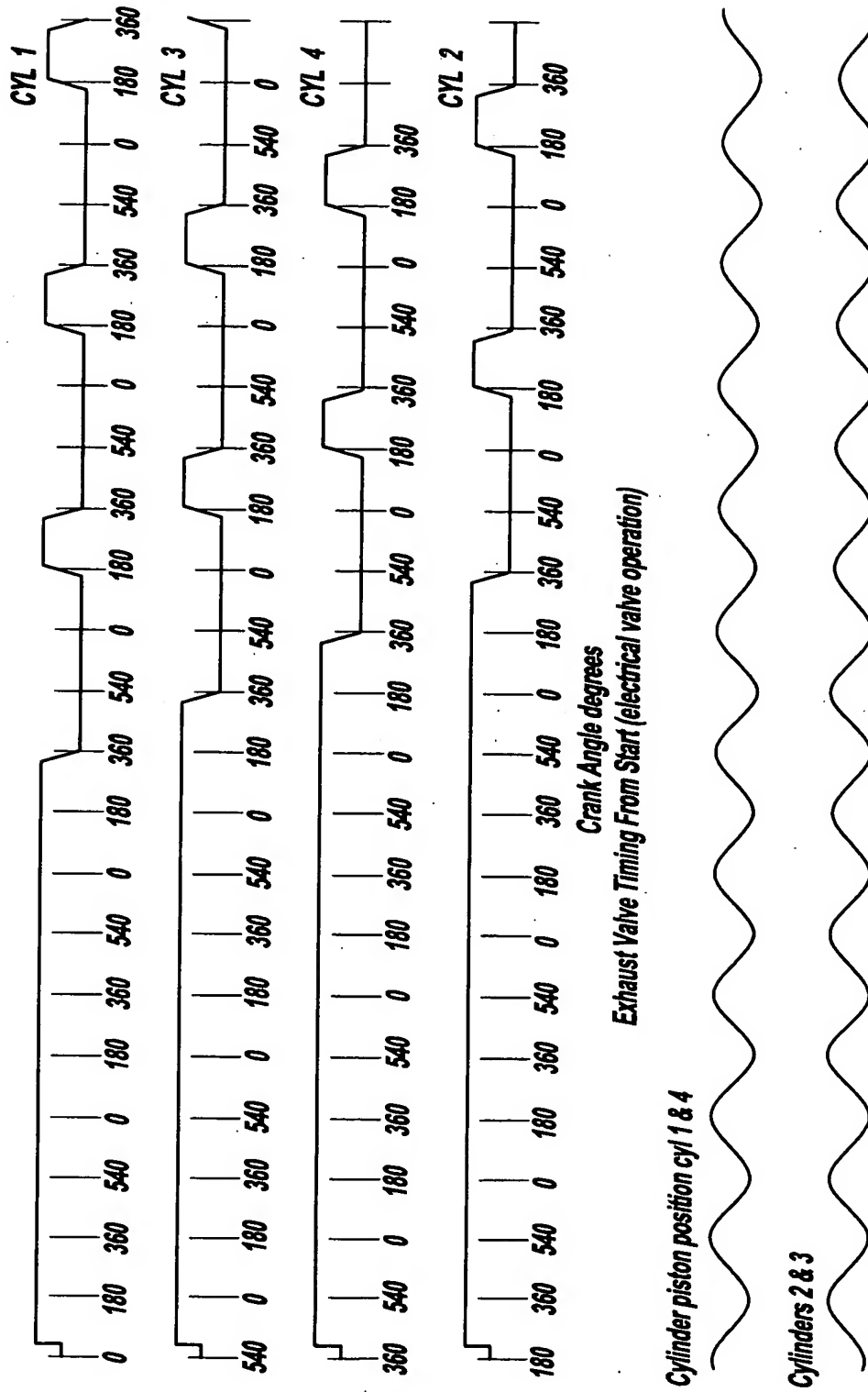
Cylinders 2 & 3

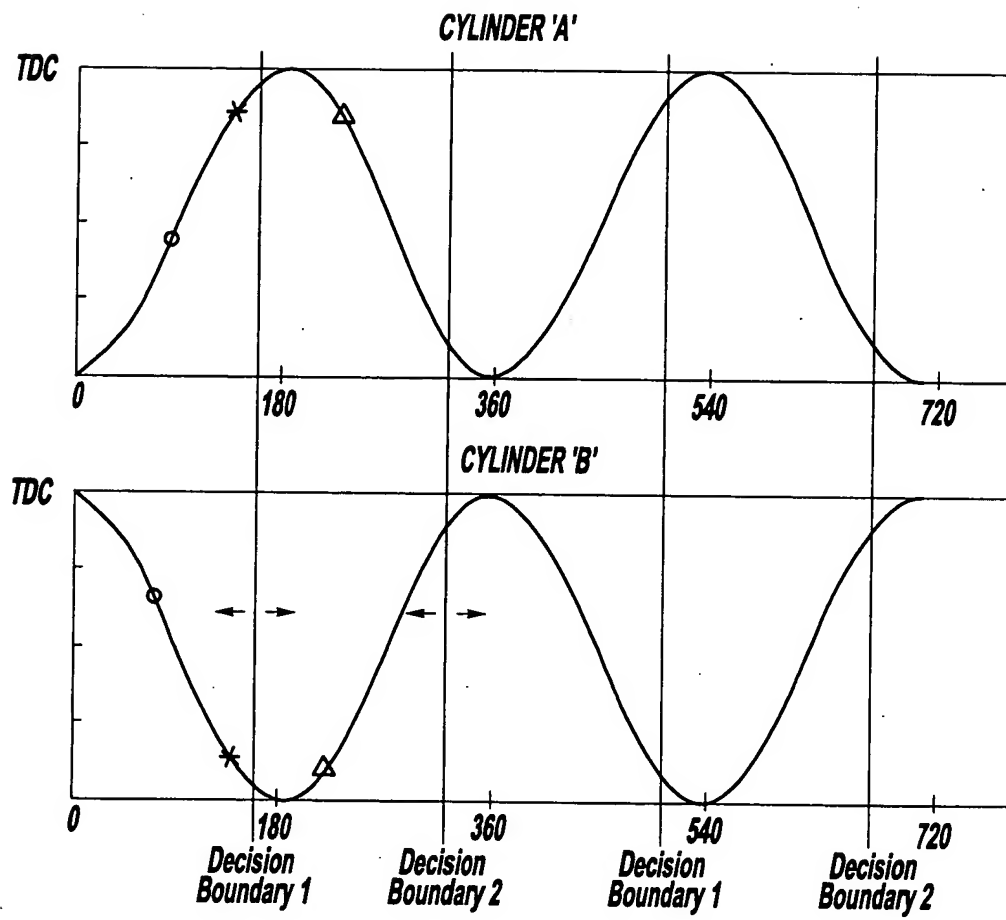
FIG - 52b

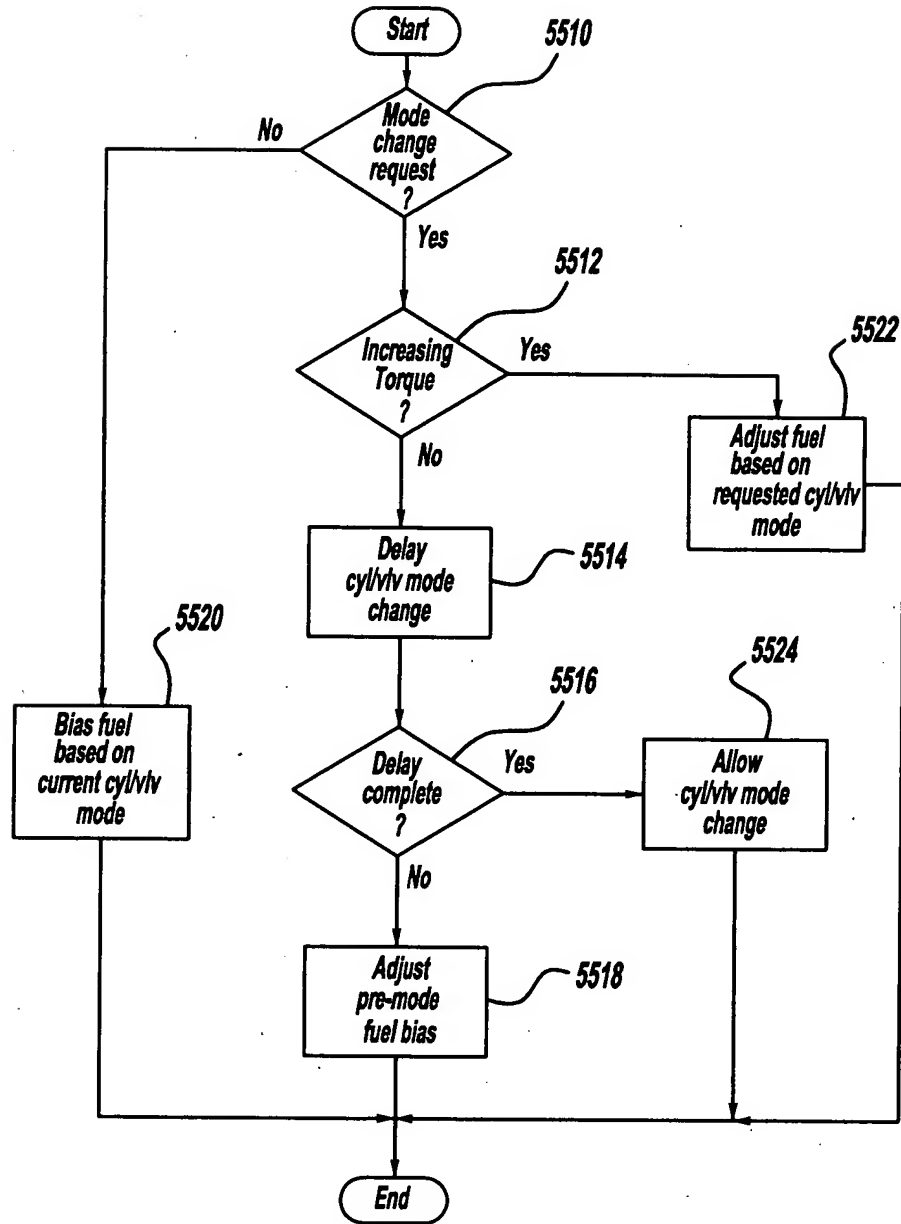


Crank Angle degrees
Intake Valve Timing From Start (electrical valve operation)

FIG - 53a



**FIG - 54**

**FIG - 55**